

# Table of Contents

<b>Preprints and proceedings on electromagnetic physics.....</b>	<b>1</b>
High-energy electromagnetic physics.....	1
Intermediate and low-energy electromagnetic physics.....	1
EM physics and tracking.....	2
Micro- and nano-dosimetry.....	2
Medical physics.....	3
Space physics.....	4
Related topics.....	4

# Preprints and proceedings on electromagnetic physics

- High-energy electromagnetic physics
- Intermediate and low-energy electromagnetic physics
- EM physics and tracking
- Micro- and nano-dosimetry
- Medical physics
- Space physics
- Related topics

## High-energy electromagnetic physics

- [link](#)

## Intermediate and low-energy electromagnetic physics

- **Validation of Geant4 low energy physics models against electron energy deposition and backscattering data** A. Lechner et al. IEEE NSS 2007 Conference Record, Honolulu, November 2007 Proceedings [link](#)
- **Validation of the Bremsstrahlung Models of Geant4** S. Chauvie et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Validation of Geant4 Electromagnetic and Hadronic Models Against Proton Data** S. Guatelli et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Simulation for LHC Radiation Background: Optimisation of Monitoring Detectors and Experimental Validation** B. Mascialino et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Geant4 Atomic Relaxation Validation Against the NIST Reference Data** V. Zampichelli et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Geant4 atomic relaxation models** A. Mantero, B. Mascialino, P. Nieminen, M.G. Pia, S. Saliceti The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [link](#)
- **Geant4 Low Energy Electromagnetic Physics** S. Chauvie, S. Guatelli, V. Ivanchenko, F. Longo, A. Mantero, B. Mascialino, P. Nieminen, L. Pandola, S. Parlati, L. Peralta, M.G. Pia, M. Piergentili, P. Rodrigues, S. Saliceti, A. Trindade The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [link](#)
- **Precision validation of Geant4 electromagnetic physics** K. Amako, S. Guatelli, V. Ivanchenko, B. Mascialino, K. Murakami, L. Pandola, S. Parlati, M.G. Pia, M. Piergentili, T. Sasaki, L. Urban The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005)

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- **Validation of Geant4 electromagnetic physics versus protocol data** K. Amako, S. Guatelli, V. Ivanchenko, B. Mascialino, K. Murakami, L. Pandola, S. Parlati, M.G. Pia, M. Piergentili, T. Sasaki, L. Urban IEEE NSS 2004 Conference Record, Rome, 2004 Paper [↗](#)
- **Geant4 atomic relaxation** S. Guatelli, A. Mantero, B. Mascialino, P. Nieminen, M.G. Pia, S. Saliceti IEEE NSS 2004 Conference Record, Rome, 2004 Paper [↗](#)
- **Geant4 and its validation** L. Pandola on behalf of the Geant4 Collaboration Proceedings of 9th Topical Seminar on Innovative Particle and Radiation Detectors, Siena (Italy), 2004 Paper [↗](#)
- **Precision Validation of Geant4 Electromagnetic Physics** G.A.P. Cirrone, G. Cuttone, S. Donadio, V. Grichine, S. Guatelli, P. Gumplinger, V. Ivanchenko, M. Maire, A. Mantero, B. Mascialino, P. Nieminen, L. Pandola, S. Parlati, A. Pfeiffer, M.G. Pia, L. Urban IEEE NSS 2003 Conference Record, Portland, 2003 Paper [↗](#).
- **Geant4 Low Energy Electromagnetic Physics** S. Chauvie, G. Depaola, V. Ivanchenko, F. Longo, P. Nieminen, M.G. Pia (on behalf of the Geant4 Low Energy Electromagnetic Group) Proceedings of CHEP2001, Beijing, 2001 Paper [↗](#)
- **Geant4 Electromagnetic Physics** S. Chauvie et al. Proceedings of the MC2000 Conference, Lisbon, 2000 Proceedings [↗](#) and INFN/AE-00/07 [↗](#)
- **Geant4 simulation of energy losses of ions** S. Giani, V.N. Ivanchenko, G. Mancinelli, P. Nieminen, M.G. Pia, L. Urban CERN-OPEN-99-300 [↗](#) and INFN/AE-99/21
- **Geant4 simulation of energy losses of slow hadrons** S. Giani, V.N. Ivanchenko, G. Mancinelli, P. Nieminen, M.G. Pia, L. Urban CERN-OPEN-99-121 [↗](#) and INFN/AE-99/20
- **Geant4 low energy electromagnetic models for electrons and photons** J. Apostolakis, S. Giani, M. Maire, P. Nieminen, M.G. Pia, L. Urban CERN-OPEN-99-034 [↗](#) and INFN/AE-99/18

## EM physics and tracking

- **A multiple scattering model in Geant4** L. Urban (Budapest, RMKI), CERN-OPEN-2006-077 [↗](#), Dec 2006. 18pp.
- **Multiple scattering model in Geant4** L. Urban (Budapest, RMKI), CERN-OPEN-2002-070 [↗](#), Nov 2002. 14pp.
- **Geant4 status and results** J. Allison et al. Proceedings of the CHEP2000 Conference, Padova, 2000 Paper [↗](#)
- **Design of tracking and generic processes in Geant4** By Geant4 Collaboration (M. Asai et al.), Oct 2000. Prepared for International Conference on Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications (MC 2000), Lisbon, Portugal, 23-26 Oct 2000. Published in Lisbon 2000, Advanced Monte Carlo for radiation physics, particle transport simulation and applications, 1117-1122
- **An algorithm to optimize the tracking of ionizing particles** J. Apostolakis, S. Giani, M. Maire, L. Urban (CERN & Annecy, LAPP & Budapest, RMKI), CERN-OPEN-99-299 [↗](#), Nov 1999. 10pp.
- **The Geant4 Object Oriented Simulation Toolkit** M.G. Pia et al. Proceedings of the EPS-HEP99 Conference, Tampere, 1999 Contribution [↗](#) and INFN/AE-99/22 [↗](#)

## Micro- and nano-dosimetry

- **Microdosimetry in High-Resolution Cellular Phantoms Using the Very Low Energy Electromagnetic Extension of the Geant4 Toolkit** S. Chauvie et al. IEEE NSS 2007 Conference Record, Honolulu, November 2007 Proceedings [↗](#)
- **Evaluation of Phase Effects in Geant4 Microdosimetry Models for Particle Interactions in Water** S. Chauvie et al. IEEE NSS 2007 Conference Record, Honolulu, October 2007 Proceedings [↗](#)
- **Monte Carlo Simulation of Electromagnetic Interactions of Radiation with Liquid Water in the Framework of the Geant4-DNA Project** Z. Francis et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Models of Biological Effects of Radiation in the Geant4 Toolkit** B. Mascialino et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Simulation with GEANT4 of a Novel Position Detector Based on Nanotechnologies** A. Montanari et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Il progetto Geant4-DNA (in Italian)** P. Nieminen and M.G. Pia, AIRO Journal, March 2001 Paper [↗](#)

## Medical physics

- **Benchmarks of medical dosimetry simulations using the grid** S. Chauvie et al. IEEE NSS 2007 Conference Record, Honolulu, October 2007 Proceedings [↗](#)
- **Geant4 Modelling of Anatomy Trough DICOM Interface** S. Chauvie et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Geant4 Anthropomorphic Phantoms** S. Guatelli et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Geant4 Simulation of an Accelerator Head for Intensity Modulated RadioTherapy** F. Foppiano, B. Mascialino, M.G. Pia, M. Piergentili The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [↗](#)
- **A general-purpose dosimetric system for brachytherapy** F. Foppiano, S. Guatelli, M.G. Pia The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [↗](#)
- **A Geant4-based simulation of an accelerator's head used for Intensity Modulated Radiation Therapy** F. Foppiano, B. Mascialino, M.G. Pia, M. Piergentili IEEE NSS 2004 Conference Record, Rome, 2004 Paper [↗](#)
- **Radiation transport calculations for beam therapy with Geant4 toolkit** I. Gudowska, V.N. Ivanchenko, S. Larsson, B. Sorcini IEEE NSS 2004 Conference Record [↗](#), Rome, 2004. IEEE Volume 4, 16-22 Oct. 2004, pp. 2148 - 2151. Digital Object Identifier 10.1109/NSSMIC.2004.1462687
- **The Geant4 Toolkit capability in the hadrontherapy field: simulation of a transport beam line** G. A. P. Cirrone, G. Cuttone, L. Raffaele, G. Russo, M. G. Pia Proceedings of 9th Topical Seminar on Innovative Particle and Radiation Detectors, Siena (Italy), 2004
- **Technology transfer from HEP computing to the medical field: overview and application to dosimetry** S. Guatelli, M.G. Pia, M. Piergentili Proceedings of 9th Topical Seminar on Innovative Particle and Radiation Detectors, Siena (Italy), 2004 Paper [↗](#)
- **Overview of Geant4 Application in Medical Physics** L. Beaulieu, J.F. Carrier, F. Castrovillari, S. Chauvie, F. Foppiano, G. Ghiso, S. Guatelli, S. Incerti, E. Lamanna, S. Larsson, M.C. Lopes, L. Peralta, M.G. Pia, M. Piergentili, P. Rodrigues, V.H. Tremblay, A. Trindade IEEE NSS 2003 Conference Record, Portland, 2003 Paper [↗](#) and INFN/AE-04/4

- **From HEP computing to biomedical research and vice-versa: technology transfer and application results** S. Chauvie, G. Cosmo, F. Foppiano, E. Lamanna, F. Marchetto, P. Nieminen, M.G. Pia, A. Solano, M. Tropeano Proceedings of CHEP2001, Beijing, 2001 Paper [↗](#)
- **Medical applications of the Geant4 Toolkit** S. Agostinelli et al. Proceedings of the EuroSim 2001 Conference, 2001 Paper [↗](#)
- **Medical Applications of the Geant4 Toolkit** S. Agostinelli et al. Proceedings of the MC2000 Conference, Lisbon, 2000 Proceedings [↗](#) and INFN/AE-00/08 [↗](#)
- **Application of the Geant4 Monte Carlo code to the dosimetry of brachytherapy treatments** S. Agostinelli et al. Proceedings of the IXth International Conference on Calorimetry in High Energy Physics, Calor2000, Annecy, 2000 Paper [↗](#) and CERN-OPEN-2000-319 [↗](#)

## Space physics

- **Radioprotection for interplanetary manned missions** S. Guatelli, P. Nieminen, M.G. Pia The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [↗](#)
- **Dosimetry for interplanetary manned missions** S. Guatelli, P. Nieminen, M.G. Pia IEEE NSS 2004 Conference Record, Rome (Italy), 2004 Paper [↗](#)
- **Simulation for astroparticle experiments and planetary explorations: tools and applications** A. Brunengo, A. De Angelis, R. Giannitrapani, E. Guardincerri, A.S. Howard, F. Longo, P. Nieminen, A. Pfeiffer, M.G. Pia, G. Santin Proceedings of CHEP2001, Beijing, 2001 Paper [↗](#)
- **Space Applications of the Geant4 Toolkit** E. Daly et al. INFN/AE-00/09
- **A Spacecraft Radiation Shielding and Effects Toolkit based on Geant4** P. Truscott et al. Proceedings of the CHEP2000 Conference, Padova, 2000 Paper [↗](#)
- **The Geant4 REMSIM Simulation for Dosimetry in Interplanetary Manned Space Missions** S. Guatelli et al., INFN/AE-04/11 [↗](#)

## Related topics

- **Writing software or writing scientific articles?** T. Basaglia et al. IEEE NSS 2007 Conference Record, Honolulu, October 2007, CERN-OPEN-2007-032 Proceedings [↗](#)
- **Analysis of Statistical Algorithms for the Comparison of Data Distributions in Physics Experiments** A. Lechner et al. IEEE NSS 2007 Conference Record, Honolulu, October 2007 Proceedings [↗](#)
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- **Evaluation of the Power of Goodness-of-Fit Tests for the Comparison of Data Distributions** B. Mascialino et al. IEEE NSS 2006 Conference Record, San Diego, November 2006
- **Monte Carlo Simulation for radiotherapy in a distributed computing environment** S. Guatelli, J. Moscicki, M.G. Pia, M. Piergentili The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [↗](#)
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- **A toolkit for statistical comparison of data distributions** B. Mascialino, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo The Monte Carlo Method: Versatility Unbounded in a Dynamic Computing World Chattanooga, Tennessee, April 17-21, 2005, on CD-ROM, American Nuclear Society, LaGrange Park, IL (2005) Preprint [↗](#)
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- **Application of statistical methods for the comparison of data distributions** S. Guatelli, B. Mascialino, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo IEEE NSS 2004 Conference Record, Rome, 2004 Paper [↗](#)
- **A Toolkit for Statistical Data Analysis** S. Donadio, S. Guatelli, B. Mascialino, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo Proceedings of CHEP 2004 Paper [↗](#)
- **A Statistical Toolkit for Data Analysis** S. Donadio, S. Guatelli, B. Mascialino, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo Proceedings of 9th Topical Seminar on Innovative Particle and Radiation Detectors, Siena (Italy), 2004 Paper [↗](#) and INFN/AE-04/9
- **Data Analysis in HEP: a Statistical Toolkit** S. Donadio, S. Guatelli, B. Mascialino, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo IEEE NSS 2003 Conference Record, Portland, 2003 Paper [↗](#) and INFN/AE-04/7
  
- **From DICOM to GRID: a Dosimetric System for Brachytherapy born from HEP** F. Foppiano, S. Guatelli, J. Moscicki, M.G. Pia, M. Piergentili Paper [↗](#) IEEE NSS 2003 Conference Record, Portland, 2003 and INFN/AE-04/6
- **Distributed processing, Monte Carlo and CT interface for medical treatment planning** F. Foppiano, S. Guatelli, J. Moscicki, M.G. Pia Proceedings of ICATPP 2003 Preprint [↗](#)
  
- **Un esempio di trasferimento tecnologico dalla fisica delle alte energie alla pratica clinica radioterapica: sviluppo di un toolkit statistico per il confronto di distribuzioni** S. Donadio, B. Mascialino, S. Guatelli, M.G. Pia, P. Viarengo, A. Pfeiffer, A. Ribon, G.A.P. Cirrone, G. Cuttone, M. Tropeano, F. Foppiano, G. Ghiso Published in the Abstract Book of SISMEC'03, Brescia (Italy), 2003 Paper [↗](#)
- **Code-testing of Statistical Test implementation** G.A.P. Cirrone, S. Donadio, S. Guatelli, F. James, A. Mantero, B. Mascialino, L. Pandola, S. Parlati, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo Proceedings of PhyStat03, SLAC, 2003 Paper [↗](#) and INFN/AE-04/5
- **A software toolkit for statistical data analysis** G.A.P. Cirrone, S. Donadio, S. Guatelli, L. Lista, A. Mantero, B. Mascialino, S. Parlati, A. Pfeiffer, M.G. Pia, A. Ribon, P. Viarengo Paper [↗](#) Proceedings of PhyStat03, SLAC, 2003 and INFN/AE-04/3 [↗](#)
- **Tools for simulation and analysis** A. Pfeiffer, M.G. Pia, on behalf of the Anaphe and Geant4 Collaborations Proceedings of ICHEP-02, Amsterdam, 2002 Paper [↗](#)
- **Architecture of collaborating frameworks: simulation, visualisation, user interface and analysis** G. Cosmo, B. Ferrero Merlino, R. Giannitrapani, F. Longo, R. Nartallo, P. Nieminen, A. Pfeiffer, M.G. Pia, G. Santin, S. Tanaka, H. Yoshida Proceedings of CHEP2001, Beijing, 2001 Paper [↗](#)
- **Object oriented design and implementation of an intra-nuclear transport model** L. Bellagamba et al. Proceedings of the IXth International Conference on Calorimetry in High Energy Physics, Calor2000, Annecy, 2000 Proceedings [↗](#) INFN-AE-00-13 (postscript) and PDF [↗](#)
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Main Electromagnetic Physics page

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