

Dr. Ioanna Kyriakou

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Department of Medicine
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EDUCATION

- PhD in Physics, Department of Physics, Lancaster University, UK (2005)
Condensed Matter Theory Group (Prof. C.J. Lambert) in collaboration
with QinetiQ Sensors & Electronics Division, Malvern, UK (Prof. J.H. Jefferson)
Dissertation: “Coherent Transport Phenomena in Semiconductor Nanostructures”
- Degree in Physics, Physics Department, University of Ioannina, Ioannina, Greece (2000)

POSITIONS AND EMPLOYMENT

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| 2021-present | Assistant Professor
Medical Physics, Department of Medicine, University of Ioannina, Greece |
| 2013-2021 | Research Associate
Medical Physics Lab, Department of Medicine, University of Ioannina, Greece |
| 2008-2012 | Post-doctoral fellow
Medical Physics Lab, Department of Medicine, University of Ioannina, Greece |
| 2005-2008 | Laboratory Teaching Associate
MSc program in “New Technologies and Research in Physics Education”
Physics Department, University of Ioannina, Ioannina, Greece |
| 2005-2009 | Instructor
Department of Informatics and Telecommunications, University of Ioannina, Greece |

PERSONAL STATEMENT

My research background and interests fall at the interface of medical physics and materials science. My research over the last 13 years relates to the interaction of ionizing radiation (mainly low-energy charged particles) with atoms and molecules at the condensed phase in both bulk and low-dimensional systems. Specifically, I have been developing practical semi-empirical models for calculating energy-loss cross sections for electrons and ions over a wide energy range in various materials of biomedical interest such as water, proteins, DNA, carbon nanotubes, and gold nanoparticles. Such physics models represent the main input to Monte Carlo radiation transport simulations in condensed media and to the calculation of fundamental dosimetry-related quantities, like stopping-power, using a first-principles approach. I am a member of the GEANT4 collaboration and its Low-Energy Electromagnetic Physics Working Group, as well as, Steering Committee member (and Physics Activity representative) of the GEANT4-DNA project (CERN/CNRS) which aims to the development of a low-energy extension of the general-purpose and open-access GEANT4 simulation toolkit (of CERN) for applications in the field of Medical Physics. I am also participating in various funded projects (by the European Space Agency, the Australian Research Council, and the European Union) on Monte Carlo simulations of energy deposition at the micro- and nano-meter scale by different ionizing radiations for various applications, including theoretical estimates of the relative biological effectiveness (RBE), mechanistic studies of radiation effects at the DNA and cellular level, and proton depth-dose profiles.

OTHER SCIENTIFIC APPOINTMENTS, PROFESSIONAL MEMBERSHIPS AND HONORS

- 2019-present Associate Editor: Medical Physics (AAPM)
https://www.aapm.org/org/structure/default.asp?committee_code=MPBAE
https://aapm.onlinelibrary.wiley.com/hub/journal/24734209/about/editorial_board
- 2018-present Member, G4-Med: GEANT4 Medical Simulation Benchmarking Group (Coordinated by University of Wollongong, Australia & CIEMAT, Madrid, Spain)
<https://twiki.cern.ch/twiki/bin/view/Geant4/G4MSBG>
- 2018-present Member, SDD: Standard for DNA Damage Collaboration (Coordinated by MGH & Harvard Medical School, USA)
<https://standard-for-dna-damage.readthedocs.io/en/latest/index.html>
- 2016-present Steering Committee Member & Physics activity representative, GEANT4-DNA Collaboration (Coordinated by CNRS, France).
<http://geant4-dna.org/>
- 2016-present Member, GEANT4 Collaboration (Coordinated by CERN, Switzerland)
<https://geant4.web.cern.ch/collaboration/members>
- 2013-present Member, GEANT4 Electromagnetic (EM) Physics Working Group (Coordinated by CERN, Switzerland, and CNRS, France)
https://geant4.web.cern.ch/collaboration/working_groups/electromagnetic

ONGOING OR RECENT PROJECTS & GRANTS

Title: Monte Carlo mechanistic investigation of physical and chemical processes induced by gold nanoparticles in cellular irradiation

Source: French National Center for Scientific Research (CNRS)

Role: Co-Principal Investigator

Duration: 2016-2018

Title: G4-NANO: development of a specialized approach to understand the physics foundation of radiosensitisation of gold nanoparticles

Source: Australian Research Council

Role: Partner Investigator

Duration: 2017-2019

Title: Geant4-based particle simulation facility for future science mission support

Source: European Space Agency (ESA)

Role: Project Team Member

Duration: 2018-2022

Title: NANOGOLD II

Source: French National Center for Scientific Research (CNRS)

Role: Co-Principal Investigator

Duration: 2019-2021

Title: Microdosimetry using the Geant4-DNA Monte Carlo code for RBE calculations of non-conventional radiations in radiotherapy

Source: Greek Ministry of Development and Investments, ESPA Funding Program: Research Support with emphasis on New Researchers

Role: Co-Principal Investigator

Duration: 2020-2021

Title: Multi-scale open-source radiation effect platform for space radiation protection

Source: European Space Agency (ESA)

Role: Co-Principal Investigator, Work Package coordinator

Duration: 2021-2023

PUBLICATIONS

Papers in peer-review journals (with impact factor): 62

Presentations (oral and/or poster) in International Conferences: 37

SCOPUS (21/10/2022) 1878 citations h-index = 25

GoogleScholar (21/10/2022) 2489 citations h-index = 27

Online research profiles

<https://orcid.org/0000-0003-2105-4078>

<https://scholar.google.com/citations?user=OnDGHiwAAAAJ&hl=el>

<https://www.scopus.com/authid/detail.uri?authorId=23110783400>