europass

Cristina Bălan

Address: -, -, Romania (Work)

EDUCATION AND TRAINING

1 OCT 2019 – CURRENT Cluj-Napoca, Romania
PHD CANDIDATE Faculty of Physics, Medical Physics Department, Babes-Bolyai University

Field of study Medical Physics | **Thesis** Characterization of Radiation Field in Particle Therapy using Pixel Detectors

1 OCT 2017 – 10 JUL 2019 Cluj-Napoca, Romania
MASTER OF SCIENCE Faculty of Physics, Medical Physics Department, Babes-Bolyai University

1 OCT 2014 – 10 JUL 2017 Cluj-Napoca, Romania
BACHELOR'S DEGREE Faculty of Physics, Medical Physics Department, Babes-Bolyai University

WORK EXPERIENCE

17 DEC 2017 – CURRENT Cluj-Napoca, Romania
MEDICAL PHYSICS EXPERT THE ONCOLOGY INSTITUTE "PROF DR ION CHIRICUTA"

- The main activities and responsibilities in the Radiotherapy Department are:
  a. performing periodic QA program
  b. lead the linear accelerator commissioning and dosimetric calibration of the beam
  c. implementation and continuous development of modern treatment techniques
  d. supervisor of summer internship for undergrad students
- Demonstrating a pragmatic approach and a learnt intention for knowledge sharing, I actively participate in national programs, specifically SRROM, as well as international initiatives such as ESTRO, ASTRO, and EFOMP, all within the field of Radiotherapy with posters or oral presentations.

1 OCT 2019 – CURRENT Cluj-Napoca, Romania
PHD CANDIDATE BABES-BOLYAI UNIVERSITY

The central idea of my research is represented by the impact of scattered radiation produced by clinical electron and proton beams. The stray radiation is investigated using a semiconductor-based detector with a hybrid design that creates visual and spectral representations of each particle group. Two experiments representative of my activity:

- using high dose rates (≥40Gy/s), the FLASH effect is most likely to appear. Using an electron beam, we investigated the impact of scattered radiation at different distances relative to the beam core.
- in a clinical proton beam of 170 MeV, an anthropomorphic head phantom with two titanium dental implants was placed in the beam path and the resulting scattered radiation was analysed.

During these years, I would like to mention the most significant internships/scientific visits during these years:

- ADVACAM, Prague, Czech Republic (June and November 2021)
- Nuclear Physics Institute CAS, Department of Accelerators, Prague, Czech Republic (June 2021)
- Joint Institute of Nuclear Research (JINR), Phasotron Facility, Dubna, Russia (November- December 2021; project number 04-2-1132-2017/2022 founded from the JINR-Romania agreement)

LANGUAGE SKILLS

Mother tongue(s): **ROMANIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C2	C1	C1	C1
FRENCH	B1	B2	B1	B1	B1
GERMAN	A2	A2	A2	A2	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Research Writing

Microsoft Word | Microsoft Office

Data Processing

Microsoft Excel | Origin Pro | Programming: Phyton, Matlab

CONFERENCES AND SEMINARS

30 JUN 2024 – 4 JUL 2024 Lisbon
25th International Workshop on Radiation Imaging Detectors

"High-resolution characterization of scattered radiation in proton therapy by Timpix3 detectors behind phantoms with and without dental implants" - Oral presentation
C. Bălan, C. Granja, G. Mytsin, S. Shvidky, A. Molokanov, V. Chiș and C. Oancea

8 APR 2024 – 12 APR 2024 Trieste
School of Hadron Radiotherapy

"Scattered radiation morphology and spectral analyses produced by a proton beam in a head and neck case with dental implants" Poster Presentation
C. Bălan, C. Granja, G. Mytsin, S. Shvidky, A. Molokanov, V. Chiș, C. Oancea,
- awarded with "The Best Poster" prize

2 NOV 2023 – 5 NOV 2023 Cluj-Napoca
The 34th Congress of the Romanian Society of Radiotherapy and Medical Oncology

1. "Dosimetric characterization of scattered radiation produced by a proton beam using timepix3 detectors in a head and neck case with dental inserts", Oral Presentation - C. Bălan, C. Granja, C. Oancea, G. Mytsin, S. Shvidky, A. Molokanov, V. Chiș
2. "Are Hybrid Techniques Feasible for Treating Breast Cancer Patients? An institutional study of dosimetric aspects in treatment planning" Oral Presentation - C. Bălan, O. Diaconu, D. Martin
3. "Evaluation of delivered dose during the pre-treatment positioning in radiotherapy using in-vivo dosimetry system" Poster Presentation - E. Nedelcu, C. Bălan, V. Chiș
4. The impact of the effective point of measurements in relative dosimetry" Poster Presentation - A. Someșan, C. Bălan

4 NOV 2022 – 5 NOV 2022 Oradea
A XX-a Conferință Națională de Fizică Medicală (CNFMR)

"Caracterizarea radiației produsă de un fascicul de protoni într-un fantom antropomorf cu implanturi dentare folosind detectori Timepix3"
C. Bălan, C. Oancea, C. Granja, G. Mytsin, S. Shvidky, A. Molokanov, V. Chiș

23 OCT 2022 – 26 OCT 2022 San Antonio
ASTRO Annual Meeting 2022

"Characterization of stray radiation produced by a proton beam in an anthropomorphic phantom with dental implants using a pixel detector Timepix3", Poster Presentation
C. Bălan, C. Granja, C. Oancea, G. Mytsin, S. Shvidky, A. Molokanov, V. Chiș

26 JUN 2022 – 30 JUN 2022 Ghent (online)

iWoRiD 2021 - 22rd International Workshop on Radiation Imaging Detectors

"Characterization of primary and stray radiation produced in FLASH electron beams with Flex chip-assembly TimePIX3 pixel detectors", Poster Presentation
C. Bălan, C. Oancea, J. Pivec, C. Granja, J. Jakubek, D. Chvatil, V. Olsansky, V. Chiș

1 DEC 2021 – 3 DEC 2021 Online

FRPT 2021 - International FLASH Radiotherapy & Particle Therapy

"Measurements of scattered radiation produced in electron beams using MiniPix TimePix3 Flex", Poster Presentation
C. Bălan, C. Oancea, J. Pivec, C. Granja, J. Jakubek, D. Chvatil, V. Olsansky, V. Chiș

6 NOV 2021 – 7 NOV 2021 Online

A XIX-a Conferință Națională de Fizică Medicală (CNFMR)

“Caracterizarea radiatiei secundare produse de un fascicul de electroni FLASH cu ajutorul detectorilor Timepix3” - Oral Presentation
C. Bălan, C. Oancea, J. Pivec, C. Granja, J. Jakubek, D. Chvatil, V. Olsansky, V. Chiș,

PUBLICATIONS

2025

Assessing the dosimetric effects of high-Z titanium implants in proton therapy using pixel detectors

C. Balan et al., Journal of Instrumentation, vol. 20, C01002

2024

Dynamics and predictors of hematologic toxicity during cranio-spinal irradiation

A. Turcas et al., Rep Pract Oncol Radiother vol. 29, 362-372.

2024

Particle Tracking, Recognition and LET Evaluation of Out-of-Field Proton Therapy Delivered to a Phantom with Implants

C. Bălan et al., Phys. Med. Biol., vol. 69, 165006

2023

Deep-learning magnetic resonance imaging-based automatic segmentation for organs-at-risk in the brain: Accuracy and impact on dose distribution

A. Turcas, D. Leucuta, C. Balan et al., Physics and Imaging in Radiation Oncology 27, 100454

2022

Stray radiation produced in FLASH electron beams characterized by the MiniPIX Timepix3 Flex detector

C. Oancea, C. Bălan, et. al, Journal of Instrumentation Vol. 7

2019

IR, Raman and SERS analysis of amikacin combined with DFT-based calculations

C. Balan, L.C. Pop, M. Baia, Spectrochimica Acta Part A: Mol and Biomol Spectroscopy 214, 79–85

2018

A vibrational study of inulin by means of experimental and theoretical methods

C. Balan et al., Journal of Molecular Structure 1164, 84-88