



Lejla Čiva

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Address: SSST, Hrasnička cesta 3A, 71210, Ilidža, Bosnia and Herzegovina (Work)

WORK EXPERIENCE

03/2019 – CURRENT Ilidža, Bosnia and Herzegovina

UNIVERSITY SENIOR TEACHING ASSISTANT - MEDICAL PHYSICS SARAJEVO SCHOOL OF SCIENCE AND TECHNOLOGY (SSST)

Senior Teaching Assistant for subjects "Medical Physics and Biophysics" and "Application of Modern Physics in Medicine" being taught to the 1st and the 2nd year Medical and Dentistry Degree students, and for subject "Biophysics" being taught to the 1st year Pharmacy Degree students at the Sarajevo Medical School at the University Sarajevo School of Science and Technology (SSST)

Business or Sector Education | **Address** Hrasnička cesta 3A, 71 210, Ilidža, Bosnia and Herzegovina |

Website <https://ssst.edu.ba/>

09/2016 – 31/08/2023 Sarajevo, Bosnia and Herzegovina

PHYSICS TEACHER SECONDARY SCHOOL THE SSST GYMNASIUM - GSSST

Teaching Physics to the pupils at the SSST Gymnasium

Business or Sector Education | **Address** Bistrik 7, 71 000, Sarajevo, Bosnia and Herzegovina |

Website <https://www.gssst.edu.ba/en>

10/2015 – 04/2019 Ilidža, Bosnia and Herzegovina

UNIVERSITY TEACHING ASSISTANT SARAJEVO SCHOOL OF SCIENCE AND TECHNOLOGY (SSST)

Teaching Assistant for subjects "Medical Physics and Biophysics" and "Application of Modern Physics in Medicine" being taught to the 1st and the 2nd year Medical Degree students at the Sarajevo Medical School at the Sarajevo School of Science and Technology (SSST)

Business or Sector Education | **Address** Hrasnička cesta 3A, 71 210, Ilidža, Bosnia and Herzegovina |

Website <https://ssst.edu.ba/>

02/10/2022 – 02/10/2022 Sarajevo, Bosnia and Herzegovina

LANGUAGE ASSISTANT FOR THE ELECTION DAY, BOSNIA AND HERZEGOVINA GENERAL ELECTIONS 2022 OSCE ODIHR - ELECTION OBSERVATION MISSION

Support to the election observation process in working as a language assistant with team of Parliamentary Election Observers

EDUCATION AND TRAINING

11/2019 – CURRENT Zagreb, Croatia

PHD IN MEDICAL PHYSICS Faculty of Science, University of Zagreb

Enrolled in the 3rd year of a PhD program in Medical Physics at the University of Zagreb

Doctoral study program includes lectures and research component. The research component is primary, while lectures are intended to prepare students and help them with their research, and to provide them with wider view on their field.

Address Bijenička cesta 32, HR-1000, Zagreb, Croatia | **Website** <https://www.pmf.unizg.hr/phy/en> |

Field of study Physical sciences | **Level in EQF** EQF level 8

2018 – 2020 Sarajevo, Bosnia and Herzegovina

NATURAL DISASTER PROTECTION MANAGEMENT - MASTER'S DEGREE Center for Interdisciplinary Studies, University of Sarajevo

Natural Disaster Risk Management program is an interdisciplinary academic Master's program, developed through the Erasmus + capacity building project in Higher Education.

The purpose of this study program is to educate students about natural disasters in accordance with the needs of society and their academic development and in accordance with the contemporary requirements of Natural Disaster Risk Management. The study program is designed to ensure the acquisition of competencies and the development of academic skills in the field of Natural Disaster Risk Management.

Address Zmaja od Bosne 8, 71 000, Sarajevo, Bosnia and Herzegovina | **Website** <http://cis.unsa.ba/en/> |

Level in EQF EQF level 7

2014 – 2018 Sarajevo, Bosnia and Herzegovina

MASTER OF PHYSICS Faculty of Science, University of Sarajevo

Thesis title: *Kerma-Area Product in Computed Tomography*

Computed tomography (CT) is a diagnostic radiology technique which uses ionizing radiation for its performance. The kerma–area product, P_{KA} , represents a convenient way of assessing the radiation dose that the patient receives during the procedure. When P_{KA} is combined with information on beam quality and physical characteristics of the patient, it is possible to perform dose estimation on certain organs and radiation risk.

This thesis describes a modified method of measuring and evaluating the kerma–area product in CT.

Subjects included:

- Statistics in Medical Radiation Physics and modeling
- Physics in Radiotherapy I and II
- Physics in Radio-diagnostics I and II
- Physics in Nuclear Medicine I and II
- Basics of Medicine for Physicists

Elective subjects included:

- Communication skills
- Physics of Environment

Address Zmaja od Bosne 33 - 35, 71 000, Sarajevo, Bosnia and Herzegovina | **Website** <http://www.pmf.unsa.ba/> |

Level in EQF EQF level 7

2009 – 2014 Sarajevo, Bosnia and Herzegovina

BACHELOR OF PHYSICS Faculty of Science, University of Sarajevo

Sub-orientation: Medical Radiation Physics

The physics study cycle lasts for a total of 8 semesters and carries 240 ECTS credits. Classes consist of lectures, tutorials, and hands-on exercises that include lab work. At the beginning of the third year of study, students opt between theoretical, experimental and medical radiation physics. These sub-orientations differ in electives in the 3rd and 4th year of study. After graduation, one earns a bachelor's degree in physics.

Thesis title: *Movement of high energy particles through matter*

Address Zmaja od Bosne 33 - 35, 71 000, Sarajevo, Bosnia and Herzegovina | **Website** <http://www.pmf.unsa.ba/> |

Level in EQF EQF level 6

2005 – 2009 Jajce, Bosnia and Herzegovina
GYMNASIUM Highschool "Nikola Šop"

"Best Student Award"

Address Fra Antuna Kneževića 27, 70 101, Jajce, Bosnia and Herzegovina | **Website** <http://www.ss-nikolasop.ba/> |

Level in EQF EQF level 4

29/05/2023 – 02/06/2023 Kaunas, Lithuania
ERASMUS+ STAFF MOBILITY FOR TEACHING Lithuanian University of Health Studies

21/04/2021 – 24/04/2021 Mostar, Bosnia and Herzegovina
ORAL PRESENTATION CMBEBIH 2021: International Conference on Medical and Biological Engineering

Title of the Oral Presentation:

Local Diagnostic Reference Levels in Emergency Computed Tomography of the Head

Computed tomography (CT) is a widely used modality in diagnostic radiology. It has found its way into emergency medicine where it represents an indispensable diagnostic tool. The main disadvantage of CT is the high radiation dose delivered to patients, which is why a lot of emphases is given to the development of optimised scanning protocols. Aim of this study was to assess the patient doses in the form of air kerma length product (PKL, CT or DLP) and volume computed tomography air kerma dose index (CVOL or CTDIvol), for the most common head CT procedures, and to compare them to different diagnostic reference levels (DRLs). The results have shown that patient doses for non-contrast CT of the head are in line with the DRLs in many countries. The results from this paper will provide a basis for the optimisation of surveyed radiological procedures.

Website <https://cmbebih2021.cmbebih.com/>

16/05/2019 – 18/05/2019 Banja Luka, Bosnia and Herzegovina
ORAL PRESENTATION CMBEBIH 2019: International Conference on Medical and Biological Engineering

Title of the Oral Presentation:

Evaluation of computed tomography X-ray beam dose profiles

Computed tomography (CT) is an imaging procedure that uses X-rays to create detailed pictures, or cross-section scans, of areas inside the body. Benefits of the CT have been proven over the past decades, but they come with a price high radiation doses to patients. Understanding how doses depend on technical parameters is a necessary step towards an optimized imaging procedure. Aim of this study was to assess the air kerma distribution and size of the X-ray beam of a conventional computed tomography scanner.

Website <https://cmbebih.com/>

14/04/2019 – 18/04/2019 Geneva, Switzerland
PARTICIPANT CERN - European Organization for Nuclear Research

Attended lectures, on-site visits, exhibitions, and hands-on workshops as an introduction to cutting-edge particle physics.

Website <https://indico.cern.ch/event/724035/>

18/03/2019 – 20/03/2019 Sarajevo, Bosnia and Herzegovina
DISCUSSION MODERATOR Tiimiss Conference on Digitalization of Bosnia and Herzegovina

Title of the session:

Digitalization of Human Medicine

Website <https://tiimiss-conference.com/>

25/06/2018 – 26/06/2018 Tuzla, Bosnia and Herzegovina

PARTICIPANT TAIEX Regional Workshop on Biomedical Engineering: Medical Physics

Attended the following lectures:

- Implementation of Council Directive 2013/59/Euratom: Justification of medical exposure
- Implementation of Council Directive 2013/59/Euratom: optimization in diagnostic radiology
- Radiation Protection and Nuclear Safety Legislation in Bosnia and Herzegovina
- Implementation of Council Directive 2013/59/Euratom: education, training and recognition of medical physics expert
- Implementation of Council Directive 2013/59/Euratom: role of radiation protection expert in medicine
- Radiobiology
- Dental radiology
- Optimization of CT practice

20/06/2018 Ilidža, Bosnia and Herzegovina

ORGANIZATION AND PARTICIPATION SSST Medical School and the BHAAS (Bosnia and Herzegovina-American Academy of Arts and Sciences)

Organized and attended lecturers by medical doctors and scientists who are members of the BHAAS.

Website <https://ssst.edu.ba/news-single/361/bhaas-on-ssst>

26/02/2018 – 27/02/2018 Banja Luka, Bosnia and Herzegovina

PARTICIPANT TAIEX Regional Workshop on Biomedical Engineering: Biomedical Signals Banja Luka

Attended the lectures about basic terms of biomedical signals and international requirements for acquiring, manipulating and storing biomedical signals, latest research results regarding the biomedical signals, acquisition and processing of electrocardiography (ECG) signal and acquisition.

29/09/2017 – 01/10/2017 Sarajevo, Bosnia and Herzegovina

ORAL PRESENTATION Congress of Radiology 2017 by the Radiology Society of Federation of Bosnia and Herzegovina

Title of the Presentation:

Assessment of computed tomography X-ray beam

Website <https://www.urufbih.ba/congress-of-radiology-2017/>

14/05/2017 – 17/05/2017 Maribor and Kranj, Slovenia

STUDY VISIT FOR THE TRAINING IN TEACHING OF SCIENCE (STEM) AT THE SLOVENIAN GYMNASIUMS Teaching Natural Sciences in Slovenian Gymnasiums, Foundation Education in Action

05/2015 – 12/2015 Heidelberg, Germany

CERTIFICATE Medical Physics for Physicists, University of Heidelberg Scientific Training

Completed 2 modules towards a **Certificate in Medical Physics** as follows:

Nuclear medicine diagnostics and therapy

- Introduction to basic physics and detector technology
- Nuclear medical instrumentation
- Radionuclide production and quality control, biological radiation effects of radioactively labeled substances and their dosimetry and biokinetic
- Data acquisition and processing, tomographic image reconstruction, mathematical models for scatter and attenuation correction
- Introduction to optical tomography, clinical presentation of nuclear medicine procedures (medical aspects of SPECT and PET as well as tracer kinetic models)
- Practical exercises on the physics of nuclear medicine

Physical basics of radiological diagnostics (X-ray, CT, MR and ultrasound) and their clinical application

Conventional X-ray diagnostics (physical and technical basics and radiation protection aspects)

- Magnetic resonance tomography (MRT): physical and mathematical foundations as well as the structure and functionality of the tomograph; modern methods of morphological and functional imaging, spectroscopy (MRS) and interventional MRI
- X-ray computer tomography (CT): mathematical and technical basics as well as computer use in data and image processing
- Ultrasound: physical basics of sound propagation, methods of A and B imaging, Doppler procedures, perfusion measurements, therapeutic ultrasound applications and biological effects of ultrasound
- clinical presentation of the imaging methods: medical aspects of X-ray diagnostics, magnetic resonance imaging and ultrasound
- practical exercises in magnetic resonance imaging and magnetic resonance spectroscopy

Website <https://www.uni-heidelberg.de/wisswb/medtechnik/medphysik/index.html>

19/05/2014 – 24/05/2014 Sarajevo, Bosnia and Herzegovina

PARTICIPANT Sarajevo School of High Energy and Medical Physics 2014 (SSHEMP)

The SSHEMP 2014 topics included: Accelerator physics: LHC, data analysis in High Energy Physics, Instrumentation, Standard Model, Symmetries in High Energy Physics, Astroparticle physics, Medical Physics and Cosmology

Attended lectures included:

1. Imaging SPECT
2. Imaging PET & Future
3. BioMedical Research
4. External Radiotherapy
5. Brachytherapy
6. MIRDOS
7. Hospital Practice
8. Hadron Therapy

Address Zmaja od Bosne 33 - 35, 71 000, Sarajevo, Bosnia and Herzegovina |

Website <http://www.pmf.unsa.ba/fizika/SCHOOL/HOME.html>

09/05/2012 – 13/05/2012 Sarajevo

PARTICIPANT Sarajevo School of High Energy Physics (SSHEP)

The School was aimed at the advanced undergraduate and master's degree students who are interested in topics pertaining to High Energy Physics

Address Zmaja od Bosne 33-35, 71 000, Sarajevo |

Website http://old.unsa.ba/s/index.php?option=com_content&task=view&id=1150&lang=english

11/07/2011 – 15/07/2011 Sarajevo

PARTICIPATION AND HELPING DURING PRESENTATIONS 20th International Laser Physics Workshop (LPHY'S 11)

Website <https://www.lasphys.com/workshops/2011>

05/2011 Sarajevo

WORKSHOP PARTICIPANT WUS Austria – Brain Gain Program

In organization of the Faculty of Natural Sciences and Mathematics, University of Sarajevo and the WUS Sarajevo.

Attended lectures and seminars aimed developing teaching skills.

Address Zmaja od Bosne 33 - 35, 71 000, Sarajevo |

Website http://old.unsa.ba/s/images/stories/files/Program_poredavanja_PMF.pdf

● LANGUAGE SKILLS

Mother tongue(s): **BOSNIAN** | **CROATIAN** | **SERBIAN**

Other language(s):

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

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

● DIGITAL SKILLS

MS Office | SPSS | C programming language | Fortran, Fortran 90 | EGSnrc | Statistic Program R

● ADDITIONAL INFORMATION

NETWORKS AND MEMBERSHIPS

11/2023 – CURRENT Sarajevo

Society of Physicists in Federation of Bosnia and Herzegovina

2021 – CURRENT

European Federation of Organisations for Medical Physics (EFOMP), Individual Associate Membership

PROJECTS

01/10/2016 – 30/09/2017

Analysis and mapping of environmental pollution and the impact on the population and the environment in the locality of Hadžići The project is financed by the Ministry of Civil Affairs of Bosnia and Herzegovina

PUBLICATIONS

[Importance of Patient Dose Evaluation and Optimization in Thorax Computed Tomography](#) – 2024

Hanić, B., Čiva, L. M., Busuladžić, M., Gazibegović-Busuladžić, A., Skopljak-Beganović, A., & Beganović, A. (2023, September). Importance of Patient Dose Evaluation and Optimization in Thorax Computed Tomography. In *Mediterranean Conference on Medical and Biological Engineering and Computing* (pp. 242-251). Cham: Springer Nature Switzerland.

[Utilisation of 3D Printing in the Manufacturing of an Anthropomorphic Paediatric Head Phantom for the Optimisation of Scanning Parameters in CT](#)

– 2023

Jusufbegović, M., Pandžić, A., Busuladžić, M., Čiva, L. M., Gazibegović-Busuladžić, A., Šehić, A., ... & Beganović, A. (2023). Utilisation of 3D Printing in the Manufacturing of an Anthropomorphic Paediatric Head Phantom for the Optimisation of Scanning Parameters in CT. *Diagnostics*, 13(2), 328.

[Dose Descriptors and Assessment of Risk of Exposure-Induced Death in Patients Undergoing COVID-19 Related Chest Computed Tomography](#)

– 2022

Čiva, L. M., Beganović, A., Busuladžić, M., Jusufbegović, M., Awad-Dedić, T. A., & Vegar-Zubović, S. (2022). Dose Descriptors and Assessment of Risk of Exposure-Induced Death in Patients Undergoing COVID-19 Related Chest Computed Tomography. *Diagnostics*, 12(8), 1012.

Local Diagnostic Reference Levels in Emergency Computed Tomography of the Head – 2021

Awad-Dedić, T., Čiva, L. M., Beganović, A., Busuladžić, M., Đedović, E., & Vegar-Zubović, S. (2021, June). Local Diagnostic Reference Levels in Emergency Computed Tomography of the Head. In *CMBEBIH 2021: Proceedings of the International Conference on Medical and Biological Engineering*, CMBEBIH 2021, April 21–24, 2021, Mostar, Bosnia and Herzegovina (pp. 768-776). Cham: Springer International Publishing.

Use of a Smaller Size Phantom When Measuring Scatter Radiation in Diagnostic and Interventional Radiology

– 2021

Skopljak-Beganović, A., Čiva, L. M., Jašić, R., Metlić, B., Pašić-Alić, A., & Samek, D. (2021, June). Use of a Smaller Size Phantom When Measuring Scatter Radiation in Diagnostic and Interventional Radiology. In *CMBEBIH 2021: Proceedings of the International Conference on Medical and Biological Engineering*, CMBEBIH 2021, April 21–24, 2021, Mostar, Bosnia and Herzegovina (pp. 826-832). Cham: Springer International Publishing.

Evaluation of the Effectiveness of Protective Aprons in the Primary and Scattered Radiation X-ray Beam

– 2021

Skopljak-Beganović, A., Čiva, L. M., Đedović, E., Zulić Hrelja, S., Gazibegović-Busuladžić, A., & Beganović, A. (2021, June). Evaluation of the Effectiveness of Protective Aprons in the Primary and Scattered Radiation X-ray Beam. In *CMBEBIH 2021: Proceedings of the International Conference on Medical and Biological Engineering*, CMBEBIH 2021, April 21–24, 2021, Mostar, Bosnia and Herzegovina (pp. 817-825). Cham: Springer International Publishing.

Dose Optimization of CT Thorax Exam in University Clinical Hospital Mostar – 2019

Lasić, I., Galić, K., Beganović, A., Lasić, V., Čiva, L., & Krasić-Arapović, A. Dose Optimization of CT Thorax Exam in University Clinical Hospital Mostar. In *CMBEBIH 2019: Proceedings of the International Conference on Medical and Biological Engineering, 16– 18 May 2019, Banja Luka, Bosnia and Herzegovina* (pp. 119-124). Springer International Publishing.

Evaluation of Computed Tomography X-Ray Beam Dose Profiles – 2019

Čiva, L. M., Beganović, A., Redžić, M., Lasić, I., Gazdić-Šantić, M., Skopljak-Beganović, A., ... & Vegar-Zubović, S. (2020). Evaluation of Computed Tomography X-Ray Beam Dose Profiles. In *CMBEBIH 2019: Proceedings of the International Conference on Medical and Biological Engineering, 16– 18 May 2019, Banja Luka, Bosnia and Herzegovina* (pp. 137-141). Springer International Publishing.

Quality control of angular tube current modulation – 2017

Redžić, M., Beganović, A., Čiva, L., Jašić, R., Skopljak-Beganović, A., & Vegar-Zubović, S. (2017). Quality control of angular tube current modulation. In *CMBEBIH 2017* (pp. 563-567). Springer, Singapore.

ORGANISATIONAL SKILLS

Organisational skills

- Organization of mentoring, supervising and delegating research project responsibilities to undergraduate students and high school pupils
- Organization with responsibility of managing others, establishing research plans, problem solving, time management
- Possesses suitable organizational skills and an appropriate knowledge of people management and project management

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

- Highly developed communication skills obtained through organization and performing lectures and practical classes in Physics at University and High School level
- Effective and concise in written, spoken and visual forms of communication with variety of interpersonal skills such as listening, asserting, influencing, persuading, empathizing etc.
- Recognizes the importance of listening and receiving feedback from peers and supervisors
- Applies interpersonal skills through team building, negotiation and conflict management
- Developed and maintained cooperative networks and working relationships with supervisors, colleagues, and peers within the institution and the wider research community
- Demonstrates self-understanding and willingness to build personal skills
- Public speaking skills gained through research presentations at seminars conferences, thesis defense, committee meetings, lab meetings, participating in speech events, etc

JOB-RELATED SKILLS

Job-related skills

- Leads discussion sections, tutorials, or laboratory sections.
 - Guides class discussions
 - Supervise laboratory work
 - Demonstrates the use of laboratory equipment and instructs on health and safety rules in a laboratory
 - Supervise high school or university student activities
 - Evaluates and grades examinations, assignments, or papers and records grades
 - Develops teaching materials, such as syllabi, visual aids, answer keys for exams, supplementary notes, or course web sites
 - Creates technology-based learning materials
 - Develops instructional materials
 - Distributes instructional or library materials
 - Provides assistance to faculty members, or staff with laboratory or field research
 - Assists other education professionals with projects or research
 - Schedules instructional activities
 - Attends lectures given by an instructor in charge of a teaching subject at a university level
 - Attends training sessions, or professional meetings to wider her education and expertise.
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