



# Lorenzo Petrolli

✉ Email address: [lorenzo.petrolli@gmail.com](mailto:lorenzo.petrolli@gmail.com)

Gender: Male Date of birth: 30/10/1988 Nationality: Italian

## EDUCATION AND TRAINING

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[ 2018 – 2022 ] **PhD in Physics**

*University of Trento*

**Address:** Trento, Italy

**Level in EQF:** EQF level 8

**Thesis:** A CONVERGENT AND MULTISCALE ASSESSMENT OF DNA DAMAGE BY PARTICLE RADIATION

**Main subject / occupational skills covered:**

*In silico* assessment of DNA lesions and systems of biophysical relevance, by means of radiation track structure and molecular dynamics techniques

[ 2011 – 2018 ] **Master degree in Photochemistry and Molecular Materials**

*Alma Mater Studiorum - University of Bologna*

**Address:** Bologna, Italy

**Final grade:** 110/110 cum laude **Level in EQF:** EQF level 7

**Thesis:** CONTROL OF THE INTERMOLECULAR PIMERIZATION PROCESS FOR A BIPYRIDINIUM-BASED TETRAMER

**Main subject / occupational skills covered:**

Advanced, academic education in photochemistry, radiation chemistry, electrochemistry, theoretical and physical chemistry, and material science

[ 2007 – 2011 ] **Bachelor degree in Material Chemistry**

*Alma Mater Studiorum - University of Bologna*

**Address:** Bologna, Italy

**Final grade:** 110/110 cum laude **Level in EQF:** EQF level 6

**Thesis:** MOBILITÀ DI CARICA DEL TETRABENZOCORONENE DA SIMULAZIONI BASATE SUL MONTE-CARLO CINETICO

[ 2002 – 2007 ] **Scientific high-school diploma**

*Liceo Scientifico-Tecnologico "G. Marconi"*

**Address:** Rovereto, Italy

**Final grade:** 100/100 **Level in EQF:** EQF level 4

## PUBLICATIONS

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[ 2020 ]

**Can we assess early DNA damage at the molecular scale by radiation track structure simulations? A tetranucleosome scenario in Geant4-DNA**

<https://doi.org/10.3389/fphy.2020.576284>

**Reference:** L. Petrolli, F. Tommasino, E. Scifoni and G. Lattanzi, *Frontiers in Physics* (2020), 8: 576284

## CONFERENCES AND SEMINARS

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- [ 01/08/2019 – 03/08/2019 ] **Euregio Joint Computational Physics Initiative Workshop**  
Schloss Goldrain (BZ)
- [ 02/11/2019 – 06/11/2019 ] **65th Radiation Research Society Annual Meeting** San Diego (CA) - USA
- [ 05/02/2020 – 08/02/2020 ] **Physics of Biomolecules: Structure, Dynamics and Function - 6th Workshop**  
Bressanone (BZ)

## WORK EXPERIENCE

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- [ 09/2017 – 03/2018 ] **University internship - 750 hours**  
*Alma Mater Studiorum - University of Bologna*  
**Address:** Bologna, Italy  
**City:** Bologna  
**Country:** Italy  
**Main activities and responsibilities:**  
*Spectroscopic characterization of solute systems, chemical and radiolytic reduction of solute systems*
- [ 05/2007 – 07/2007 ] **University internship - 150 hours**  
*Alma Mater Studiorum - University of Bologna*  
**Address:** Bologna, Italy  
**City:** Bologna  
**Country:** Italy  
**Main activities and responsibilities:**  
*Quantum-chemical simulation of electron transfer in molecular crystals*

## LANGUAGE SKILLS

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**Mother tongue(s):** Italian

**Other language(s):**

**English**

**LISTENING** C1 **READING** B2 **WRITING** C1

**SPOKEN PRODUCTION** C1 **SPOKEN INTERACTION** C1

## DIGITAL SKILLS

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### My Digital Skills

#### Basic skills

G-Suite | Microsoft Office Suite (Word, Excel, PowerPoint) | Internet

#### Advanced skills

Latex | Linux Terminal (user level) | Basic Bash | Basic Git (version control software)  
| Pre-Intermediate Python, C++

#### Professional/technical skills

Basic Geant4 (radiation track structure toolkit) | VMD, NAMD/Gromacs (visualization, simulation of molecular systems)

## PROFESSIONAL SKILLS

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### Professional skills

Over the PhD, I have matured an in-depth knowledge of the theoretical framework underneath molecular dynamics (MD) and Monte-Carlo track structure (MCTS) techniques, and confidence in the technical skills required to tackle the *in silico* assessment of biomolecular systems in an autonomous manner. In this concern, I acknowledge the advantages and limitations in the modelization of nucleic acids by means of classical, molecular mechanics force fields, as well as within a multiscale framework.

As for my research experience, I have interfaced with different scientific communities, from both theoretical and applied physics; together with my background in chemistry, I have thus developed a natural inclination to work within multidisciplinary environments.

Moreover, I have co-tutored and now collaborate with a PhD student from the Statistical and Biological Physics (SBP) unit of the Physics department of the University of Trento, over a project related to the *in silico* assessment of the characteristic timescales associated with the thermal fracture of DNA by means of double strand break (DSB) lesions.

## COMMUNICATION AND INTERPERSONAL SKILLS

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### Communication and interpersonal skills

- Good analytical skills and critical thinking
- Good adaptability to multidisciplinary scientific contexts
- Good exposition skills