



Urban Senica

Gender: Male
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<http://splet02.izum.si/cobiss/bibliography?code=A268706147&langbib=eng>



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Summary

I am a highly motivated Ph.D. Student of Physics, interested in photonics, solid-state physics and nanotechnology, with experience in research and industry and awarded multiple times for outstanding academic results.

Key Competencies

- Photonics, Optoelectronics & Photovoltaics
- Semiconductors (Cleanroom, Electron Beam & Optical Lithography, Microscopy, Semiconductor Lasers, Optical Characterization, Silicon Detectors)
- Modeling & Simulation, Computing (Comsol Multiphysics, Lumerical Solutions, Matlab & Simulink, Wolfram Mathematica, ROOT, HSPICE, LTspice, ASPIN3)
- Nanoelectronics
- Analog & Digital Electronics (FPGAs & CPLDs - VHDL)
- Embedded Systems Design & Programming
- PCB Design (Altium Designer, KiCad)
- Programming (C, C++, VHDL, Java, Android, Javascript, HTML)
- Practical Skills (measurements, soldering...)

Relevant Experience

- 2018- Ph.D. Student at Quantum Optoelectronics Group, **ETH Zürich**
- research on terahertz frequency combs based on quantum cascade lasers
- 2017 Research Assistant at Walter Schottky Institut, **Technische Universität München**
- experimental research around nanowire lasers with multi quantum wells
- 2017 Master Student at Walter Schottky Institut, **Technische Universität München**
- research on monolithically integrated nanowire lasers on Si-waveguides for future on-chip optical interconnects
 - numerical simulations showed spin-orbit coupling effects enable unidirectional coupling of light into the waveguide
- 2016 Summer Student at **CERN**, Geneva, Switzerland
- supervised work within the EP-DT-DD: Solid State Detectors Lab
 - further development of TRACS, a fast simulator of irradiated silicon detectors
 - participation in the Poster Session, hands-on workshops, summer lecture programme, CERN facilities visits

- 2015 Student Researcher at Laboratory of Photovoltaics and Optoelectronics, Faculty of Electrical Engineering, **University of Ljubljana**
- ⇒ electrical numerical simulations of crystalline silicon solar cells and a comparison of two simulators
 - ⇒ presented my research in a paper at an International Conference
- 2013 & 2014 Summer Internship at **Sistemi IN ES**, a successful high-tech company, based in Boštanj, Slovenia
- ⇒ developed a Bluetooth-based communication system between an Android device and the main computer of a prototype electric car »Chebela«, which was partially developed at Sistemi IN ES

Education

ETH Zürich, Department of Physics

2018 – Ph.D. Student, Physics

Technical University Munich, Department of Electrical and Computer Engineering

2016 – 2017 Exchange Student (Erasmus+ & »Dr.-Ing. Otto und Karla Likar-Stiftung«)

University of Ljubljana, Faculty of Electrical Engineering

2015 – 2017 Master's degree, Electronics, average grade 9.73/10

2012 – 2015 Bachelor's degree, Electrical Engineering – Electronics, average grade 9.82/10

Awards and Honours

- 2015 & 2017 The Award for excellent final grade upon the completion of studies.
- 2013, 2014 & 2017 The Award of the Dean for exemplary completion of study requirements (*awarded to the top student in his/her year of study, i.e. the best one among ~100 students*).
- 2012 »Zlati Maturant« – graduated with honors (*awarded to top students at high school final exams – I was in the top 3% in Slovenia*).

Publications & Conferences

1. Julio Calvo, Marcos Fernández, Pablo de Castro Manzano, Álvaro Díez, **Urban Senica**, Michael Moll, Ivan Villa. **TRACS: A Multi-Thread Transient Current Simulator for Micro Strips and Pad Detectors**. *Nuclear Instruments and Methods in Physics Research, Section A, under revision (2018)*.
2. **Urban Senica**, Jochen Bissinger, Thomas Stettner, Daniel Ruhstorfer, Gregor Koblmüller, Jonathan J. Finley. **Mode control in monolithically integrated nanowire lasers on silicon waveguides**. *Seminar in Electromagnetics, 14th June 2017, Institute of Electromagnetic Fields (IEF), Department of Information Technology and Electrical Engineering, ETH Zürich*
3. **Urban Senica**, Marcos Fernández. **Calculation of effective space charge of irradiated Si detectors: comparing simulations with measurements**. *Summer Student Poster Session, 3rd August 2016, CERN, Geneva, Switzerland*
4. **Urban Senica**, Miha Filipič. **Simulation of crystalline silicon solar cell top contact using ASPIN3 and COMSOL Multiphysics simulators**. *51st International Conference on Microelectronics, Devices and Materials and the Workshop on Terahertz and Microwave Systems, September 23 - 25 2015, Bled, Slovenia*.
5. **Urban Senica**, Blaž Prah, Urban Rupnik. **A security system for bicycles**. *24th International Electrotechnical and Computer Science Conference ERK 2015, September 21-23 2015, Portorož, Slovenia*.

Language skills

English – C2, German – B1, French – A2, Croatian – B2, Slovenian – native speaker