List of Publications

- *Two case studies of post – seismic regime in The Vrancea Region*, C. Ciucu and C. Fulga, Romanian Rep. Phys. **60**, 173 (2008).
- *Background analysis of field-induced electron emission from nanometer scale heterostructured emitters*, V. Filip, D. Nicolaescu, I. C. Fulga, T. Mitran, and H. Wong, J. Vac. Sci. Technol. B **27**, 711 (2009).
- *Nonzero temperature effects on antibunched photons emitted by a quantum point contact out of equilibrium*, I. C. Fulga, F. Hassler, and C. W. J. Beenakker, Phys. Rev. B **81**, 115331 (2010).
- *Scattering formula for the topological quantum number of a disordered multi-mode wire*, I. C. Fulga, F. Hassler, A. R. Akhmerov, and C. W. J. Beenakker, Phys. Rev. B **83**, 155429 (2011) [Chapter 2].
- *Topological quantum number and critical exponent from conductance fluctuations at the quantum Hall plateau transition*, I. C. Fulga, F. Hassler, A. R. Akhmerov, and C. W. J. Beenakker, Phys. Rev. B **84** 245447 (2011) [Chapter 4].
- *Scattering theory of topological insulators and superconductors*, I. C. Fulga, F. Hassler, and A. R. Akhmerov, Phys. Rev. B **85**, 165409 (2012) [Chapter 3].
- *Thermal metal-insulator transition in a helical topological insulator*, I. C. Fulga, A. R. Akhmerov, J. Tworzydło, B. Béri, and C. W. J. Beenakker, Phys. Rev. B **86**, 054505 (2012) [Chapter 5].
- *Adaptive tuning of Majorana fermions in a quantum dot chain*, I. C. Fulga, A. Haim, A. R. Akhmerov, and Y. Oreg, New J. Phys. **15**, 045020 (2013) [Chapter 6].

- *Statistical Topological Insulators*, I. C. Fulga, B. van Heck, J. M. Edge, and A. R. Akhmerov, arXiv:1212.6191 [Chapter 7].

- *Phase-locked magnetoconductance oscillations as a probe of Majorana edge states*, M. Diez, I. C. Fulga, D. I. Pikulin, M. Wimmer, A. R. Akhmerov, and C. W. J. Beenakker, Phys. Rev. B **87**, 125406 (2013).

- *Flux-controlled quantum computation with Majorana fermions*, T. Hyart, B. van Heck, I. C. Fulga, M. Burrello, A. R. Akhmerov, and C. W. J. Beenakker, Phys. Rev. B **88**, 035121 (2013).

- *Effects of disorder on Coulomb-assisted braiding of Majorana fermions*, I. C. Fulga, B. van Heck, M. Burrello, and T. Hyart, arXiv:1308.0244.

- *Topological phase transitions driven by non-Abelian gauge potentials in optical square lattices*, M. Burrello, I. C. Fulga, E. Alba, L. Lepori, and A. Trombettoni, arXiv:1308.0750.

- *Quantum phase transitions of a disordered antiferromagnetic topological insulator*, P. Baireuther, J. M. Edge, I. C. Fulga, C. W. J. Beenakker, J. Tworzydło, arXiv:1309.5846.

Curriculum Vitæ

I was born in Bucharest, Romania, on the 2nd of October 1986, where I completed my primary, secondary, and high school education. In 2004, while attending the George Cosbuc bilingual high school, I won the National Public Speaking Competition, organized by the English Speaking Union.

After graduating in 2005, I started studying physics at the Faculty of Physics of the University of Bucharest. During my bachelor studies I worked on research projects under the guidance of Prof. Valeriu Filip, and the late Prof. Cristian Ciucu. I graduated in 2008 cum laude, writing a bachelor thesis under the supervision of Prof. Virgil Băran, entitled "Transport Phenomena in Mesoscopic Systems: the Role of Quantum Effects".

After receiving my B.Sc. in Bucharest, I spent a short time at the Laboratoire de Physique Corpusculaire in Clermont-Ferrand, France, doing a research internship on "Research beyond the Standard Model". Afterwards I moved to Leiden, where I enrolled in the Physics Master Program of Leiden University, track Theoretical Physics. During my Master's studies I worked as a student assistant for Leiden University, was awarded the Leiden University Fund scholarship, and received the Shell Stipend for Theoretical Physics. With a Master's thesis supervised by Prof. Carlo Beenakker and titled "Anti-bunched photons emitted by a Quantum Point Contact", I received an M.Sc. cum laude in 2010.

After completing my Master's education I remained in the group of Prof. Carlo Beenakker for my Ph.D. studies, being employed by the Foundation for Fundamental Research on Matter (FOM). Part of the research I performed during the last three years is presented in this thesis.

During my Ph.D. studies I was a teaching assistant in the course "Statistical and Thermal Physics 2", taught by Prof. Helmut Schiessel. I attended multiple schools, workshops and conferences, presenting my work in The Netherlands, Italy, and Germany.