

Damir Vodenicarevic

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🌐 damip.net

Born April 3, 1991

Driver's license, own car



Education

- 2014 **Master's in Physics and Nanotechnology**, *Université Paris-Sud*, *Highest honors (Très bien, rank: 1st)*.
Year 2 (Master's in Nanodevices and Nanotechnology): Theoretical and experimental courses in nanotechnology theory, design, fabrication and applications to electronics and medicine.
Year 1 (Magistère in Fundamental Physics): Theoretical and experimental courses in fundamental physics. Extra summer courses in Economy and Management.
- 2012 **Bachelor in Physics & Chemistry**, *Aix-Marseille Université*, *Highest honors (Félicitations du jury, rank: 1st)*.
Theory and experiments in math, physics & chemistry. Awarded a 2-year grant as the university top physics student.
- 2009 **CPGE Mathematics**, *Lycée Thiers, Marseille*.
Selective track, fast-paced courses in advanced mathematics, physics, algorithms, engineering, English, literature, philosophy.

Working experience

- Oct. 2014 **PhD: Rhythms and Oscillations: a Vision for Nanoelectronics**, *C2N (CNRS)*, Orsay.
- Dec. 2017 In collaboration with UMR CNRS/Thales.
Design of oscillator networks for efficient brain-inspired machine learning. Studied the micro-magnetic physics of emerging spin torque nano-oscillators and designed a macro-spin VerilogA component model compatible with industrial SPICE tools. Implemented this model as a machine learning GPU accelerated operator for TensorFlow and successfully performed pattern classification leveraging intrinsic nano-device physics. Experimentally implemented a state of the art cryptographic quality low power random number generator with stochastic nano-oscillators and used it for bayesian inference. Raised funds from the Ministère de l'Environnement (14 MGC S 006). Presented the work at international conferences and published articles.
- Oct. 2014 **Teaching**, *Université Paris-Sud / Polytech' Paris-Sud*, Orsay.
- Oct. 2017 Computer architectures theory (1st year Master's, 2 semesters), FPGA experimental teaching (1st year Master's, 3 semesters), C++ programming class (4th year engineering school, 3 semesters), Digital electronics experimental teaching (1st year engineering school, 1 semester)
- 2014 - 2016 **Biotechnology start-up co-founder and CTO**, Paris.
Co-founded a start-up (Blue Deer Biotech, SIRET 81506317700019) providing automation solutions in biology. Directed the robotics team. Actively participated in the fund-raising process. The project was selected to receive a PEPITE 2014 starting grant, and got incubated in 2015 at the Centre de Recherche Interdisciplinaire in Paris.
- Mar. 2014 **Master's internship in neuromorphic computing**, *IEF (CNRS)*, Orsay.
- Jul. 2014 Designed an associative memory based on coupled spin torque nano-oscillators using Cadence circuit design and simulation tools. Demonstrated the promising capabilities of such circuits.
- Aug. 2013 **Internship in experimental synthetic biology, iGEM 2013 contest**, *IGM (CNRS)*, Orsay.
- Sept. 2013 Genetically modified *e.coli* bacteria by plasmid design and bacterial transformation in order to degrade PCB-related pollutants in drinking water. Led the Simulation and Modeling team. Participated in fund-raising and communication. Designed, built and tested an affordable open-source DNA replication machine (PCR). The project was awarded an European Gold Medal.
- Apr. 2013 **Internship in experimental biophysics**, *LPS (CNRS)*, Orsay.
- Jul. 2013 Performed cell culture, controlled mechanical stress, con-focal and fluorescence microscopy on mutant human muscular cells and analyzed the results to understand the mechanisms leading to myopathy.
- Feb. 2012 **Theoretical research internship in micro-magnetism**, *CINaM (CNRS)*, Marseille.
- Apr. 2012 Programmed a Metropolis-Hastings Ising model micro-magnetic simulator in C++ and explained the unusual magnetic behavior of the CoV_2O_6 crystal. Predictions were later independently confirmed experimentally.
- Jun. 2012 **Internship in particle physics**, *CPPM (CNRS)*, Marseille.
- Aug. 2012 Analyzed massive data from the LHCb experiment using the Root framework, looked for unexplained behaviors through relativistic reconstruction of particle disintegrations. But everything behaved just like predicted by the Standard Model.

Skills

- Languages Fluent in French, English (TOEIC 2013: 960/990) and Serbo-Croatian. Basic Italian.
- Programming C/C++, HTML5, JS, PHP, Python, VHDL, VerilogA, Go
- Electronics Digital and analog electronics, Microcontrollers, FPGAs, Raspberry Pi
- Software tools Matlab, Labview, Root, MPI, Cadence, CUDA, TensorFlow, nodeJS

Extras

- Associations Member of Electrolab Hackerspace Nanterre. Former member of Synthebiol Paris-Saclay.
- Sports Hiking, geocaching, trampoline, diving (SSI Advanced Adventurer certification).

Refer to Google Scholar profile for publication list. References available upon request.