# Xavier Valcarce

website [valcarce.fr](https://valcarce.fr) gitlab [gitlab.com/plut0n](https://gitlab.com/plut0n) mail [xavier.valcarce \_at\_ unibas.ch](mailto:xavier.valcarce@unibas.ch)

### Interests

Quantum Information Theory, Quantum Computing and Communication, Machine Learning, Numerical Analysis

### Experiences

**Sept. 2018 to present**

**Research Assistant** at *Quantum Optics Theory Group (Nicolas Sangouard), University of Basel (Basel, Switzerland)*  
**Publications**:  
- [What is the minimum CHSH score certifying that a state resembles the singlet?](http://arxiv.org/pdf/1910.04606.pdf) arXiv:1910.04606  
**Talks & Conferences**:  
- DPG 2019 (Freiburg, DE) - Talk given on Device-independent certification of an elementary quantum network  
- Quantum Information 2019 (Benasque, ES) - Talk given about my Master Thesis  
- 8th NCCR QSIT Winter School (Arosa, CH)  
**Teaching**:  
- Quantum Information Theory (FS 2019)  
- Physics 4 - Introduction to quantum information and quantum optics (SS 2019)  
- Quantum Information and Computation (FS 2018)

**Apr. 2018 to Sept. 2018**

**Master Thesis** at *Quantum Information Theory Group (Antonio Acin), ICFO (Barcelona, Spain)*  
Master thesis project on *Machine Learning for Nonlocality Detection in Multipartite System* under the supervision of Joseph Bowles, Gabriel Senno and Antonio Acin.  
**Publication** : [thesis available here](https://valcarce.fr/physics/master_thesis.pdf)

**Jun. 2017 to Jul. 2017**

**Master Project** at *Quantum Correlations Group (Nicolas Brunner), University of Geneva, (Geneva, Switzerland)*  
Summer internship on *Semi-Device Independent Quantum Random Number Generator*, under the supervision of Jonatan Bohr Brask and Nicolas Brunner.  
**Publication** : [internship report available here](https://valcarce.fr/physics/qrng.pdf)

### Education

**2016 to 2018**

**Master in Subatomic Physics**, pass with merit Claude Bernard University, Lyon, France

**2013 to 2016**

**Bachelor in Physics**, pass with merit Claude Bernard University, Lyon, France  
**Erasmus+** (FS 2015), University of Oulu, Oulu, Finland

### Technical Skills and Knowledge

* **Physics**:
  + Quantum Information, Quantum Mechanics, Quantum Optics
  + Particle Physics, Nuclear Physics, Standard Model
* **Programming**:
  + Python : Optimization (SDP, LP, …), machine learning (Pytorch), numerical analysis
  + Julia : Optimization (SDP, LP, …), numerical analysis
  + Mathematica
  + Bash : scripting, software developpement
  + C++
  + Latex, Markdown, HTML/CSS, …