Jean-Stanislas Denain

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Second year student at École polytechnique, passionate about Mathematics, Computer Science and Biology.
Searching for an internship next summer to apply and develop my scientific skills.

Education

2017–present **École polytechnique**, Paris.
- Mathematics: Probability, Statistics, Abstract Algebra, Numerical methods and Optimisation
- Computer Science: Logic, Algorithms, Data Analysis
- Biology: Molecular Biology and Genetics
- Physics: Quantum Mechanics, Statistical Physics

2015–2017 **Classe préparatoire MPSI/MP-Info**, *Lycée Sainte Geneviève*, Versailles.
Selective post-secondary program in Mathematics, Physics and Computer Science, leading up to competitive nationwide entrance examinations

2015 **Baccalauréat scientifique**.
Félicitations du jury (Highest honours)

Experience

2018–present **Co-founder and treasurer**, *aXone*, Neuroscience student society.
Organised conferences by neuroscience and cognitive science scholars
Launched and ran a journal club for fellow students

2017–2018 **Teacher**, *Lyon-Corbas Prison*, Lyon.
6-month immersion in the prison system, as part of my first year at Polytechnique
Worked full-time teaching English, elementary mathematics and science to groups of up to 15 inmates

Computer skills

Langages   Python, C++, Java, Caml
Specialised   QuTiP (quantum toolbox), Brian2 (simulator for spiking neural networks)
Tools   LaTeX, GitHub

Languages

Bilingual in French and English, advanced Spanish (C1)

Projects

2019 **Quantum feedback methods to stabilize photon-number states**, *supervised by Mazyar Mirrahimi*.
Replicating simulations of quantum systems and the control theoretic tools used to stabilize them.
QuTiP code available online.

2018–2019 **Fast approximations using Well-Separated Pair Decompositions**.
Java implementation of quasilinear approximation algorithms for 3D computational geometric problems (closest pair, farthest pair, graph drawing) using Well-Separated Pair Decompositions.
In collaboration with Timothée Chauvin. Java code available online.

2018–2019 **Random walks on groups, cutoffs and mixing times**.
Took part in this weekly seminar run by Romain Tessera.
Material covered: tools from group representations and graph theory, standard probabilistic methods.

2018–2019 **Random Walks for Partial Differential Equations**.
Numerical resolution of a few PDEs using Markov Chains methods.
In collaboration with Timothée Chauvin. Proofs and Jupyter notebooks available online.

2016–2017 **Optimisation methods and Image segmentation**.
Mathematical analysis and coding of standard iterative optimisation algorithms and some variants.
Applications to spectral image segmentation.