

GAEL REINAUDI

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Education

- Sep 2004-Aug 2008 • **Ph.D. in experimental quantum physics, *École Normale Supérieure de Paris***
Atom Optics Group led by Claude Cohen-Tannoudji (Nobel Laureate)
Ph.D. thesis published as a book
- Sep 2001-Aug 2005 • ***École Normale Supérieure de Paris*** (Admission through competitive exams)

Skills

Quantitative Finance:

- Logic above all, breaking down problems, obsessed with finding possible biases
- Numerical methods, probability, machine learning, series 57
- Experience with research-grade evolutionary optimizations and deep learning
- Reviewing most recent research papers and adapting code gists to new problems
- Making tools for meaningful visual feedback from experiments, data flow, results
- Minimizing path to failure of an idea to optimize time spent on the next version of it

Programming:

- C++, Python, design patterns, data structures, algorithms
- Tools: Linux/Win, iPython notebooks, Pandas, Tensorflow, TCP communication
- Competitor in the TopCoder, Google CodeJam and openAI algorithm competitions

Professional Experience

Algorithmic Trading:

- Oct 2015-present • **Ronin Capital (New York):** Lead data scientist, Lead strategy developer
From state-of-the-art research tools to production trading (equity/ETF)
 - ◊ Implementing data processing to identify opportunities
 - ◊ Various programs cooperating to organize and route the inferred signals
 - ◊ Order managing system for production trading based on those signals
- May 2015-Oct 2015 • **Cache.AI (New York):** Co-founder and data scientist
AI-based forecast of personal finance transactions (web-app)
- Apr 2013-May 2015 • **Global Trading System (New York):** Lead trading model developer
Full coding of the data structure/logic and trading data analysis
 - ◊ Simulations to motivate production code design
 - ◊ Coding low-latency strategies (HFT market-making client on CME and BrokerTec)
 - ◊ Fully automated strategy deployment system

Framework for interactive research and data processing:

- 2007-present • Project *single-handedly* designed and coded
Used in Columbia University atom-optics experiments, as well as in production trading
 - ◊ Open source on github.com/GaelReinaudi/LabExe
 - ◊ C++, object-oriented, Qt-based gui, multi-threaded
 - ◊ 30+ existing plugins, coded by users through the exposed API & plugin wizard
 - ◊ Interface for image processing, shape fitting, scripting, genetic optimizations

Scientific Research:

- Mar 2011-Apr 2013 • **Columbia University (New York):** Associate Research Scientist in atomic physics
Precision metrology in atomic and molecular physics
- Sep 2008-Mar 2011 • **Columbia University (New York):** Postdoc in atomic physics
Building of an experiment for the production of ultra-cold molecules
- Sep 2004-Aug 2008 • **École Normale Supérieure de Paris:** Ph.D. in the Laboratoire Kastler-Brossel
Evaporative cooling of atomic clouds for the production of a matter-wave in the degenerate regime

Teaching:

- Sep 2006-Jun 2008 • Scientific expert demonstrator at the *Palais de la Découverte* (scientific museum) in Paris
- Sep 2004-Sep 2005 • Examiner in preparatory classes for the Grandes Écoles

Additional information

- Interests • Avid rock climber (top 7.12d), tinkerer and maker over a wide range of projects (from woodworking to self balancing robots), Arduino, electronic circuits, making and flying model airplanes and helicopters, quadcopter First-Person-View flying enthusiastic about the *Lean Startup* methodology

Publications

- 2012**
- G. Reinaudi, C. B. Osborn, M. McDonald, S. Kotochigova & T. Zelevinsky
Optical Production of Stable Ultracold Sr88 Molecules
Phys. Rev. Lett., **109**, 115303 (2012)
 - G. L. Gattobigio, A. Couvert, G. Reinaudi, B. Georgeot & D. Guéry-Odelin
Optically guided beam splitter for propagating matter waves
Phys. Rev. Lett., **109**, 030403 (2012)
Selected for the *American Physical Society "Spotlighting exceptional research"*
- 2011**
- G. Reinaudi, C. B. Osborn, K. Bega, & T. Zelevinsky
Dynamically configurable and optimizable Zeeman slower using permanent magnets and servomotors
J. Opt. Soc. Am. B, 160242 (2011)
- 2010**
- G. Reinaudi, book publication of the Ph.D. Thesis
Manipulation d'atomes ultra-froids: vers un laser à atomes continu (Manipulation of ultra cold atoms: towards a continuous atom laser)
Editions Universitaires Européennes, ISBN 978-613-1-50940-7 (2010)
- 2008**
- A. Couvert, M. Jeppesen, T. Kawalec, G. Reinaudi, R. Mathevet, & D. Guéry-Odelin
Quasi-monomode guided atom laser
Eur. Phys. News **39-Highlights**, 6-14 (2008)
 - A. Couvert, M. Jeppesen, T. Kawalec, G. Reinaudi, R. Mathevet, & D. Guéry-Odelin
A quasi-monomode guided atom-laser from an all-optical Bose-Einstein condensate
Europhys. Lett. **83**, 50001 (2008)
Selected for the "**Highlights**" section in Eur. Phys. News **39**
 - G. Reinaudi & D. Guéry-Odelin
A Maxwell's demon in the generation of an intense and slow guided beam
Phys. Rev. A **78**, 015401 (2008)
 - A. Couvert, T. Kawalec, G. Reinaudi & D. Guéry-Odelin
Optimal transport of ultracold atoms in the non-adiabatic regime
Europhys. Lett. **83**, 13001 (2008)
- 2007**
- G. Reinaudi, T. Lahaye, Z. Wang & D. Guéry-Odelin
Strong saturation absorption imaging of dense clouds of ultracold atoms
Opt. Lett. **32**, 3143 (2007)
 - G. Reinaudi, A. Sinatra, A. Dantan & M. Pinard
Squeezing and entangling nuclear spins in ^3He
J. Mod. Opt. **54**, 675-695 (2007)
 - G. Reinaudi, Z. Wang, A. Couvert, T. Lahaye & D. Guéry-Odelin
A mirror to generate a beam
Eur. Phys. News **38-Highlights**, 3-17 (2007)
- 2006**
- G. Reinaudi & D. Guéry-Odelin
The atom lasers
DGA Edition, Bulletin bibliographique Prospective Oriented Group on Lasers and Optronics (POLOQ)
n°2006-1, p. 165-172
 - G. Reinaudi, Z. Wang, A. Couvert, T. Lahaye & D. Guéry-Odelin
A moving magnetic mirror to slow down a bunch of atoms
Eur. Phys. J. D **40**, 405-410 (2006)
Selected for the "**Highlights**" section in Eur. Phys. News **38**
 - T. Lahaye, G. Reinaudi, Z. Wang, A. Couvert & D. Guéry-Odelin
Transport of Atom Packets in a Train of Ioffe-Pritchard Traps
Phys. Rev. A **74**, 033622 (2006)
 - G. Reinaudi, T. Lahaye, A. Couvert, Z. Wang & D. Guéry-Odelin
Evaporation of an atomic beam on a material surface
Phys. Rev. A **73**, 035402 (2006)
- 2005**
- T. Lahaye, Z. Wang, G. Reinaudi, S.P. Rath, J. Dalibard & D. Guéry-Odelin
Evaporative cooling of a guided rubidium atomic beam
Phys. Rev. A **72**, 033411 (2005)
 - T. Aichele, V. Zwiller, M. Scholz, G. Reinaudi, J. Persson & O. Benson
Multiplexed quantum cryptography with single InP quantum dots
Proceedings of SPIE **5722**, 30-44 (2005)
 - A. Dantan, G. Reinaudi, A. Sinatra, F. Laloë, E. Giacobino & M. Pinard
Long lived quantum memory with nuclear atomic spins
Phys. Rev. Lett. **95**, 123002 (2005)
- 2004**
- T. Aichele, G. Reinaudi & O. Benson
Separating cascaded photons from a single quantum dot: Demonstration of multiplexed quantum cryptography
Phys. Rev. B **70**, 235329 (2004)