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:

- Putting logic above all, breaking down problems, finding the source of possible biases
- Numerical methods, probability, machine learning, series 57
- Experience with research-grade evolutionary optimizations and deep learning

Programming:

- C++11, Python, design patterns, data structures, algorithms
- Tools: Linux/Win, iPython notebooks, Qt, 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
- ◇ Interfaces for numerical optimizations (gradient, non-gradient based and genetic)
- ◇ Interface for image processing, shape fitting, scripted numerical expressions

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

- Scientific guide in the *Atom Optics Group, École Normale Supérieure*

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 Europeennes, 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)