# Alexander Ford Hahn

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## Experience

*Nomura Securities International, Tech Analyst* August '14 - August '16
New York, NY
Recently finished the third leg of a 1.5 year long automation project. Phase I automated the Nomura America's Fixed Income OTC Derivatives trading desk front to back flow. From pricing/ valuation functions, Cash and Settlement processes, to record keeping and financial ledger postings. I was a tech analyst working alongside numerous areas of the firm. Phase II focused on Nomura America's Equity OTC Derivatives trade flow. With the completion of the first phase and team re-orgs I was promoted to be the lead tech analyst of the project and managed the entire project through the SDLC project framework. Similar to phase I I worked with the full spectrum of the firm, from the derivative quants, traders, Risk, Ops, Product Controllers, to a multitude of tech teams. Some more common tasks included investigating and updating pricing and valuation models, constructing xml messages and file feeds, creating test scripts/ harnesses, Oracle SQL table design, and other FOBO automations for full STP. The completion of NHA Derivatives Phase I&II automation helped Nomura increase operational efficiency and reduce/ refactor headcount. Phase III focused more on automating complex exotic notes and bonds, hedged with various derivative swap models to create custom tailored financial products for clients.

*Cornell Mathematics Department, Teaching Assistant* August '13 - May '14
Cornell, Ithaca NY
Two years math center teaching experience with over 100 undergraduates. The majority came for Calculus 1 & 2, Linear Algebra, Multivariable Calculus, and Differential Equations. As per my concentration in mathematical physics/scientific computing I was allocated more towards the physics undergrads and their relevant courses: ODE and PDE solver techniques, linear algebra, Lie Theory, and Matrix computation algorithms (Numerical Methods). Furthermore, I TA'ed a mechanics 101 course and assisted in laser cavity cooling research during the summer of 2013 through Cornell at The University of Shanghai for Science and Technology.

## Education

Cornell University B.A. May 2014, **Major**: Mathematics **Concentrations**: Mathematical Physics, Scientific Computing/ Numerical Analysis, **High School**: Nyack High School (2006-2010) National Merit Scholar

## Skills/Technology

**General Purpose Languages (by experience)**: Python, OCaml, C++, Haskell
**Domain Specific Languages**: MATLAB, LaTeX, SQL (PLSQL, Oracle, MySQL, sqlplus), Bash/Shell, Mathematica
**Other**: Advanced VIM user, Emacs for OCaml for various reasons, advanced excel user, strong Visio skills and other project management tools (JIRA, Autosys, PPM, etc), OS in order: Linux (Ubuntu)/Mac, Windows Fluent with "Numerical Recipes in C++" by Professor Teukolsky and "Matrix Computations" by Professor Van Loan)

## Coursework

(* *denotes graduate (PhD) level courses*)

- Quantum Physics (various)
- Functional programming and Data Structures (OCaml)
- Quantum Information Processing* (quantum computing)
- Matrix Lie Groups
- Data Structures & Object Oriented Programming (Java)
- Numerical Analysis (Linear and Nonlinear EQ's, MATLAB)
- Computational Physics* (C++, Mathematica)
- Honors Intro to Mathematical Analysis
- Numerical Analysis (ODE's and PDE's, MATLAB)
- Multivariable Calculus for Engineers
- Linear Algebra
- General & Special Relativity
- MATLAB
- Techniques in Exoplanetary Systems Detection
- Electricity and Magnetism
- Mechanics & Kinematics
- Thermodynamic and Statistical Physics
- Matrix Computations* (CS, MATLAB)
- Number Theory

## Honors & Activities

National Merit Scholar, Cornell Mathematical Modeling Competition (MCM), Cornell Symphony Orchestra, Cornell United Club Soccer, Cornell Math and Physics Club, Association of CS Undergraduates