

## **Jonathan P. Hanke**

124 John Street  
Princeton, NJ 08542

C: (919) 636-0206

jonhanke@gmail.com

---

### **Financial Mathematician and Software Developer**

#### **Mathematical Modeling ♦ Software Development ♦ Quantitative Research**

Extensive experience in research mathematics and software development aimed at theoretically and numerically answering concrete questions about long-term equity portfolio management strategies and number theory. Ability to communicate complicated technical concepts to a wide audience based on years of academic teaching. Energetic, entrepreneurial, and persistent in the face of adversity.

---

#### **KEY ACCOMPLISHMENTS**

- Developed a compiled and interpreted software package in Python/Cython/C for testing equity portfolio trading strategies on market data.
- Developed and implemented a collaborative project for the creation of a Wikipedia page on Stochastic Portfolio Theory.
- Awarded and managed an internal \$80K grant at UGA for purchasing multiple computer servers to create an international collaborative computational infrastructure. Managed user accounts and software installations in a Unix/Linux environment.
- Created extensive C++ software library for computations with quadratic forms, leading to the proof of the 290-Theorem with 2014 Fields medalist and Princeton Professor Manjul Bhargava.
- Created extensive Python classes for the SAGE open-source computer algebra system to allow others to easily work with quadratic forms.
- Mentored several original Undergraduate and Ph.D. student theses, which led to students pursuing mathematical careers in cryptography, academia, defense, and education.
- Wrote and researched many original papers on topics in Computational Number Theory and Stochastic Portfolio Theory.

#### **PROFESSIONAL EXPERIENCE**

##### **INTECH Investment Management LLC**

**2012 – 2014**

##### ***Associate Director of Research***

Developed models for equity market behavior and trading costs, researched new portfolio strategies and products, participated in high-level client meetings and discussions. Also involved in decisions about hardware and software upgrades, product marketing strategies, and new product development.

- Took initiative to perform market research and numerical simulations with a new product development that led to advancement of the project to the next phase. Worked internally to obtain market price data from various organizational representatives. Also cleaned and processed this data to allow for its useful incorporation into various simulations.
- Wrote research papers and client communication notes explaining the mathematics of Stochastic Portfolio Theory. This led to new insights in the fundamental portfolio value SDE noise term and helped to communicate why rebalancing is important for reducing portfolio volatility.
- Initiated and managed a project to create a Wikipedia page on Stochastic Portfolio Theory, which involved coordinating with academic and financial experts in the theory and also creating additional content to make the main points of the theory more accessible.
- Developed and tested an extensive software package in Python/Cython/C for determining portfolio strategy performance based on equity market data.

**UNIVERSITY OF GEORGIA**

**2008 – 2012**

*Tenure-track Assistant Professor*

Created and taught courses to undergraduate and graduate students, held office hours and extensive exam review sessions, served on several departmental committees, and performed original theoretical and computational research.

- Mentored a Ph.D. thesis in the analytic theory of quadratic forms, which led to the student doing original mathematical research, algorithm development, and writing mathematical software.
- Obtained \$80K internal grant from the Dean's office to develop a computational infrastructure for international collaborative research. Made purchasing and administrative decisions for multiple computer servers and was involved with managing user accounts and software.
- Organized a three day international conference on "Quadratic Forms and Lattices" for over forty researchers and graduate students in computational number theory.

**MAX PLANCK INSTITUTE, BONN**

**2007 – 2008**

*Visiting Scientist*

Performed original mathematical research in an international collaborative environment, participated in individual and collaborative research projects and gave several research seminar talks.

**DUKE UNIVERSITY**

**2003 – 2007**

*Assistant Research Professor and Visiting Assistant Professor*

Performed original mathematical research, developed and taught an undergraduate Number Theory course for four years among other courses and gave several seminar talks and mentored students. Also wrote an extensive C++ library for quadratic form computations.

**PRINCETON UNIVERSITY**

**2002 – 2003**

*Instructor*

Performed original mathematical research, participated in working student seminars, and taught and coordinated the Calculus and Linear Algebra courses each with 10-12 instructors.

**RUTGERS UNIVERSITY**

**1999 – 2002**

*Hill Assistant Research Professor*

Performed original mathematical research, taught undergraduate courses in Calculus and Cryptography among others, mentored independent student projects and participated in several working seminars.

**EDUCATION**

**Ph.D., Mathematics**, Princeton University, Princeton, NJ

**M.S., Mathematics**, Princeton University, Princeton, NJ

**B.S., Mathematics with Departmental Honors**, SUNY at StonyBrook, StonyBrook, NY

**SKILLS**

Programming in C/C++/Python/Bash, SAGE, R; Research level knowledge in Probability, Stochastic Mathematics, Stochastic Portfolio Theory, Algorithms, and Number Theory; Dvorak keyboard.