

# Pei Zhang

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## Objective

A quantitative analyst position for trading strategy development or derivative instrument pricing.

## Education

**Purdue University, West Lafayette, IN**

**Ph.D.** in *Mathematics*, Expected May, 2007

**M.S.** in Mathematics specialized in *Computational Finance*, 2005

**University of Science and Technology of China (USTC), Hefei, China**

**B.S.** in *Mathematics*, 2001

**B.S.** in *Computer Science* (dual degree), 2000

## Skills

**Mathematics:** Coursework in Probability, Introduction to Mathematical Statistics, Introduction to Stochastic Processes, Ordinary Differential Equations, Partial Differential Equations, Numerical Analysis, Real Analysis, Complex Analysis

**Finance:** Coursework in Mathematics of Finance, Advanced Probability and Options with Numerical Methods, Options and Futures, Simulation Design and Analysis

**Programming:** C++, FORTRAN, Mathematica, Excel/VBA

## Experience

**-Teaching assistant, Purdue University, 2001-2003, 2005-present:** Taught courses *Ordinary Differential Equation, Calculus, Algebra and Trigonometry*. My duties included three hours' teaching and two hours' office hour per week, working out the homework solutions, giving quizzes, and grading homework.

**-Research assistant, Purdue University, 2003-2005:** Under the support from NSF grant DMS-0314575. Constructed an age-structured partial differential equation (PDE) model for Schistosomiasis host-parasite system. Analyzed the model analytically and numerically to specify an optimal treatment strategy. Published one paper in *Mathematical Biosciences*, with another two submitted and one in preparation.

**-Course Projects, Purdue University:**

-Coded European and American options using finite-difference method, binomial tree method and Monte Carlo method in C++. Discussed the dependence of the option prices on different parameters, such as time to maturity, strike price and volatility both analytically and numerically. Compared the convergent speeds and errors of the above three methods.

-Coded Exotic options such as Barrier, Lookback and Spread using binomial tree method and Monte-Carlo simulations in C++. Compared the results of the two methods with the analytical solution

-Implemented non-linear asymmetric GARCH option pricing model, the GJR-GARCH model using Monte Carlo simulations and compared the results with those from Black-Scholes model.

-Priced bonds under Vasicek short-rate model and implemented the model using Monte-Carlo method, simulated the spot yield curve and the forward rate curve.

-Built Black-Derman-Toy tree and Hull-White tree which are calibrated to the initial yield curve, used the trees to price fixed income derivatives such as European/American option on bonds and swaptions.

## Awards

**-Excellent Graduate Student Scholarship, Purdue University, 2001**

**-Zhang Zhongzhi Scholarship, USTC, annually awarded to top 10%, 2001**

**-Excellent Student Scholarship, USTC, annually awarded to top 20%, 1997, 1999, 2000**

**-Second Class Award for Zu Chongzhi Mathematics Competition, 1993**