

## Guoliang Wu

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## Education

- ◇ **University of California at Berkeley**, Ph.D. in Mathematics  
Expected May 2009, current GPA: 3.98
- ◇ **Nankai University** (Tianjin, China), B.S. in Mathematics, June 2004  
Nankai Special Class of Mathematics, GPA: 3.8, **Graduate with Honor**.

## Publication and Preprint

Xin Guo and Guoliang Wu, *Smooth Fit Principle for Impulse Control of Multi-dimensional Diffusion Processes*, SIAM Journal on Control and Optimization, to appear, 2008.

Xin Guo and Guoliang Wu, *Impulse Control of Multi-Dimensional Jump Diffusions*, in preparation.

## Research

Advisors: **Lawrence Craig Evans** and **Xin Guo**.

Research interests: partial differential equations, stochastic controls and optimizations.

Recent Research Topics:

- ◇ Impulse Control of Diffusion Processes in  $\mathbb{R}^n$ : We proved that the value function is the unique viscosity solution of the associated Hamilton-Jacobi-Bellman equation (among uniform continuous functions bounded below) and the  $W^{2,p}$ -regularity ( $p < \infty$ ) of the value function. We also derive explicitly the optimal policy and value function for a specific example.
- ◇ Impulse Control of Jump Diffusions in  $\mathbb{R}^n$ : We study impulse controls of jump diffusion processes and prove the regularity of the value function by exploiting that it solves the HJB partial integro-differential equation in a viscosity sense.

## Teaching Experience

### Instructor

Full teaching responsibility. Responsible for designing syllabus, giving lectures, leading group discussions and creating and grading exams/quizzes.

- ◇ Calculus II, Summer 2008
- ◇ Calculus II, Summer 2007
- ◇ Calculus II, Summer 2006

### Teaching Assistant

Responsible for leading group discussions, creating and grading quizzes, grading exams and sometimes giving mini-lectures.

- ◇ Calculus II, Spring 2008
- ◇ Calculus II, Spring 2006
- ◇ Calculus I, Fall 2005
- ◇ Calculus II, Spring 2005

Average teaching evaluations: 6.1 points out of 7.

## Honors

**Outstanding Graduate Student Instructor**, UC Berkeley 2008

The Outstanding Graduate Student Instructor Award “gives campuswide recognition to excellence in teaching by Graduate Student Instructors”.

**Meritorious Winner**, Mathematical Contest in Modeling 2004

MCM is an international contest in which participating teams use mathematical models to solve real world problems.

**Excellent Graduate**, Nankai University 2004

Only one graduate is awarded this honor each year in Department of Mathematics.

**Scholarship for Excellent Science and Engineering Students**, Tianjin, China 2003

**First-Class Scholarship**, Nankai University 2001, 2002, 2003

Only one student is awarded this scholarship each year in the major.

## Presentations

Student PDE seminar, UC Berkeley:

- ◇ Linear programming and optimal control 9/12/2008, 9/19/2008

- ◇ PDE arising from liquidity risk model in finance 4/18/2008
- ◇ Portfolio models and PDE 1/25/2008, 2/1/2008
- ◇  $C^{1,1}$  estimates for the obstacle problem 10/12/2007
- ◇ PDE models for impulse control 8/31/2007
- ◇ Nash equilibria for ergodic games 3/13/2007
- ◇ Nash equilibria and introduction to  $N$ -person stochastic games 2/14/2007
- ◇ The Pontryagin maximum principle in optimal control theory 9/29/2006, 10/6/2006
- ◇ Another proof of the Pontryagin maximum principle 10/13/2006

## Conferences Attended

- Joint Mathematics Meetings, San Diego  
American Mathematical Society 1/6/2008 — 1/9/2008
- Stochastic Dynamical Systems and Control  
Mathematical Science Research Institute 3/26/2007 — 3/30/2007
- Introductory Workshop in Nonlinear Elliptic Equations and Its Applications  
Mathematical Science Research Institute 8/15/2005 — 8/19/2005

## References

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