

# Curriculum Vitae

## Personal Information

Tao Chen, Ph.D.

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## Current Appointment

Postdoctoral Assistant Professor  
Department of Mathematics  
University of Michigan, Ann Arbor

August 2020 – Present

## Past Appointments

Visiting Assistant Professor  
Department of Statistics and Applied Probability  
University of California, Santa Barbara

June 2020 – June 2020

Adjunct Professor  
Department of Applied Mathematics  
Illinois Institute of Technology

June 2017 – July 2017

Visiting Assistant Professor  
Department of Applied Mathematics  
Illinois Institute of Technology

August 2016 – May 2017

## Education

Doctor of Philosophy: Applied Mathematics, Illinois Institute of Technology, USA, August 2016

- Thesis: Dynamic Conic Finance via Backward Stochastic Difference Equations and Recursive Construction of Confidence Regions
- Advisors: Tomasz Bielecki, Igor Cialenco

Professional Master: Mathematical Finance, Illinois Institute of Technology, USA, 2012

Master of Science: Applied Mathematics, Nanjing University, China, 2010

Bachelor of Science: Applied Mathematics, Southeast University, China, 2007

## Publications

Dynamic Conic Finance via Backward Stochastic Difference Equations (with Tomasz R. Bielecki and Igor Cialenco), SIAM J. Fin. Math. 6(1), 1068-1122. (55 pages), 2015

Recursive Construction of Confidence Regions (with Tomasz R. Bielecki and Igor Cialenco), Electron. J. Statist. 11(2), 4674-4700. (27 pages), 2017

Adaptive Robust Control under Model Uncertainty (with Tomasz R. Bielecki, Igor Cialenco, Areski Cousin and Monique Jeanblanc), SIAM J. Control Optim. 57(2), 925-946, (22 pages), 2019

A Machine Learning Approach to Adaptive Robust Utility Maximization and Hedging (with Michael Ludkovski), Preprint, (33 pages), 2019

Time-Inconsistent Markovian Control Problems under Model Uncertainty with Application to the Mean-Variance Portfolio Selection (with Tomasz R. Bielecki and Igor Cialenco), Preprint, (24 pages), 2020

Nonparametric Adaptive Bayesian Stochastic Control Under Model Uncertainty (with Jiyoun Myung), Preprint, (27 pages), 2020

Adaptive Robust Optimal Execution with Transient Price Impact (with Michael Ludkovski and Moritz Voss), In preparation, 2020

Risk-Sensitive Markovian Control Problems Under Model Uncertainty: Finite Time Horizon Case (with Tomasz R. Bielecki and Igor Cialenco), In preparation, 2020

## **Research Interests**

Stochastic Control, Statistical Inference, Machine Learning, Robust Techniques, Model Uncertainty, Model Risk, Dynamic Risk Measures, Dynamic Acceptability Indices, Backward Stochastic Differential Equations, Derivative Pricing

## **Presentations and Posters**

Nonparametric Adaptive Bayesian Optimal Control  
Mathematical Finance Colloquium, University of Southern California, 2020

Adaptive Robust Stochastic Control  
Financial/Actuarial Mathematics Seminar, University of Michigan, Ann Arbor, 2020

Parametric Optimization, Robust Stochastic Control and Statistical Surrogates  
SIAM Conference on Financial Mathematics & Engineering, Toronto, 2019

Parametric Optimization, Robust Stochastic Control and Statistical Surrogates  
9<sup>th</sup> Western Conference on Mathematical Finance, Los Angeles, 2018

Nonparametric Adaptive Robust Control under Model Uncertainty  
Department Seminar Fall 2018, University of California, Santa Barbara, 2018

Adaptive Robust Stochastic Control and Statistical Surrogates  
Robust Techniques in Quantitative Finance, Oxford, UK, 2018

Adaptive Robust Trading under Model Uncertainty  
10<sup>th</sup> World Congress of the Bachelier Finance Society, Dublin, Ireland, 2018

Adaptive Robust Hedging under Model Uncertainty  
Mathematical Finance Colloquium, University of Southern California, 2017

Market Making via Sub-scale Invariant Dynamic Acceptability Indices  
CFMAR Seminar, University of California, Santa Barbara, 2017

Adaptive Robust Hedging under Model Uncertainty  
SIAM Conference on Financial Mathematics & Engineering, Austin, 2016

Dynamic Conic Finance via Backward Stochastic Difference Equations  
Methods of Mathematical Finance, Pittsburgh, June 2015

## **Conferences and Summer Schools**

SIAM Conference on Financial Mathematics & Engineering, Toronto, 2019

9<sup>th</sup> Western Conference on Mathematical Finance, Los Angeles, 2018

3<sup>rd</sup> Eastern Conference on Mathematical Finance, Chicago, 2018

Robust Techniques in Quantitative Finance, Oxford, UK, 2018

10<sup>th</sup> World Congress of the Bachelier Finance Society, Dublin, Ireland, 2018

Robust Methods in Probability & Finance, Providence, 2017

SIAM Conference on Financial Mathematics & Engineering, Austin, 2016

Methods of Mathematical Finance, Pittsburgh, 2015

SIAM Conference on Financial Mathematics & Engineering, Chicago, 2014

SIAM Conference on Financial Mathematics & Engineering, Minneapolis, 2012

The 13<sup>th</sup> National Mathematics Graduate Summer School, 2008

## **Awards**

Applied Math McMorris Summer Stipend Award, 2012

Excellent Thesis, 2007

Jiangsu Provincial First Prize in China Undergraduate Mathematical Contest in Modeling, 2005

## **Academic Services**

### **Reviewer for Scientific Journals**

SIAM Journal on Control and Optimization

Stochastics: An International Journal of Probability and Stochastic Processes

Journal of Banking and Finance

Mathematics and Financial Economics

International Journal of Theoretical and Applied Finance

## Teaching Experience

Department of Mathematics, University of Michigan, Ann Arbor

- MATH 526 (Discrete State Stochastic Processes) 2020

Department of Statistics and Applied Probability, University of California, Santa Barbara

- PSTAT 120A (Probability and Statistics) 2017, 2018, 2019
- PSTAT 170 (Introduction to Mathematical Finance) 2018, 2019, 2020
- PSTAT 171 (Mathematics of Fixed Income Markets) 2019, 2020
- PSTAT 176/276 (Advanced Mathematical Finance) 2018, 2020
- PSTAT 193 (Internship in Statistics) 2018
- PSTAT 199 (Independent Studies) 2018

Department of Applied Mathematics, Illinois Institute of Technology

- MATH 252 (Introduction to Differential Equations) Fall 2016, Spring 2017
- MATH 333 (Matrix Algebra and Complex Variables) Spring 2017
- MATH 474 (Probability and Statistics) Summer 2017

## Non-academic Professional Experience

Quantitative Risk Research Intern, CME Group, March 2012 - May 2012

- Data analysis
- Constructing historical curves of major currencies

## Other Experience

Research/Teaching Assistant, Illinois Institute of Technology, 2012 - 2016

Treasurer of IIT SIAM Student Chapter, 2012 - 2013

Grader at Department of Applied Mathematics, Illinois Institute of Technology, 2011-2012

Teaching Assistant, Department of Mathematics, Nanjing University, 2007 - 2010