Wei Wei

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Research Interests

Optimal insurance design · Dependence modeling · Stochastic ordering
Cyber risk management · Optimal scheduling · Ruin theory and applications

Education

- Ph.D. in Actuarial Science, University of Waterloo, Canada August 2013
- Master in Actuarial Science, Nankai University, China June 2009
- Bachelor in Mathematics, Chern S. S. Math Program, Nankai University, China June 2006

Appointments

- Assistant Professor August 2013 - Present
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Part-time Lecturer 2012
  Department of Statistics and Actuarial Science, University of Waterloo
- Research/Teaching Assistant 2009-2013
  Department of Statistics and Actuarial Science, University of Waterloo

Professional Designations

- Associate of Society of Actuaries 2016
- Associate of China Association of Actuaries 2008

Research Papers

- Wei, Wei. Shift effect of background risk on optimal insurance design. *Working paper*
- Wang, Lingfeng, and Wei Wei. Pricing cyber risks on power grids. *Working paper*
- Yichun Chi and Wei Wei. Optimal insurance with background risk: an analysis of general dependence structures, *under review*
- Wei Wei. Single machine scheduling with stochastically dependent times, *revised and resubmitted to Journal of Scheduling*

- Yichun Chi and Wei Wei. 2018. Optimum insurance contracts with background risk and higher-order risk attitudes, *ASTIN Bulletin: The Journal of the IAA*, *published online*
- Wei Wei. 2018. Properties of stochastic arrangement increasing and their applications in allocation problems, *Risks* **6**(2): 49
- Wei Wei. 2017. Joint stochastic orders of high degrees and their applications in finance. *Insurance: Mathematics and Economics* **76**: 141-148
- Jun Cai, David Landriault, Tianxiang Shi, and Wei Wei, 2017. Joint insolvency analysis of a shared MAP risk process: a capital allocation application. *North American Actuarial Journal*: 1-15
- Ranadeera Gamage Madhuka Samanthi, Wei Wei, and Vytaras Brazauskas, 2017. Comparing the riskiness of dependent portfolios via nested L-statistics. *Annals of Actuarial Science* **11**(2): 237-252
- Ranadeera Gamage Madhuka Samanthi, Wei Wei, and Vytaras Brazauskas, 2016. Ordering Gini indexes of multivariate elliptical risks. *Insurance: Mathematics and Economics* **68**: 84-91
- Jun Cai, Wei Wei, 2015. Notions of multivariate dependence with applications in optimal portfolio selections. *Journal of Multivariate Analysis* **138**: 156-169
- Jun Cai, Wei Wei, 2014. Some new notions of dependence with applications in optimal allocation problems. *Insurance: Mathematics and Economics* **55**(1): 200-209
- Jun Cai, Wei Wei, 2012. On the invariant properties of notions of positive dependence and copulas under increasing transformations. *Insurance: Mathematics and Economics* **50**(1): 43-49
- Jun Cai, Wei Wei, 2012. Optimal reinsurance with positively dependent risks. *Insurance: Mathematics and Economics* **50**(1): 57-63

Conference Presentations

- 53rd Actuarial Research Conference, London, Canada — August 2018
  Optimal Insurance with Background Risk: An Analysis of General Dependence Structures
- 22nd International Congress on Insurance: Mathematics and Economics, Sydney, Australia — July 2018
  Optimal Insurance with Background Risk
- 2nd International Workshop on Optimal (Re)Insurance, Beijing, China — July 2018
  Invited: *Optimal Insurance with Background Risk: An Analysis of General Dependence Structures*
- 52nd Actuarial Research Conference, Atlanta, US — July 2017
  Comparison of Insurance Contracts with Background Risks in High-order Risk Attitudes
- 20th International Congress on Insurance: Mathematics and Economics, Atlanta, US — July 2016
  A Class of Weak Stochastic Orders with Dependence and Their Applications in Optimization Problems
- 50th Actuarial Research Conference, Toronto, Canada — August 2015
  Ordering Gini Indexes of Multivariate Elliptical Risks with Different Dependence
- 18th International Congress on Insurance: Mathematics and Economics, Shanghai, China — July 2014
  Notions of Multivariate Dependence with Applications in Optimal Portfolio Selections

- International Workshop on High-Dimensional Dependence and Copulas, Beijing, China January 2014
  Invited: *A New Class of Dependence Notions with Applications in Finance*
- 2nd Workshop on Insurance Mathematics, Toronto, Canada January 2012
  Invited: *Optimal Allocations of deductibles and policy limits with generalized dependence structures*
- 46th Actuarial Research Conference, University of Connecticut, U.S. August 2011
  Optimal Reinsurance with Positively Dependent Risks
- 45th Actuarial Research Conference, Simon Fraser University , Canada July 2010
  Optimal Reinsurance Strategy in Two Dimensional Risk Model

Invited Talks

- Hang Seng Management College, Hong Kong, China. January 2016
- Department of Mathematics, Illinois State University, U.S. October 2015
- Division of Statistics, Northern Illinois University, U.S. March 2015
- Department of Statistics and Actuarial Science, University of Iowa, U.S. February 2013
- Department of Mathematical Sciences, University of Wisconsin-Milwaukee, U.S. March 2013
- Department of Risk Management and Insurance, Nankai University, China September 2012
- Munich Reinsurance Company, Toronto, Canada June 2011

Grants

- National Science Foundation (NSF) Grant, $352,109 2017-2019
  Funding Agency: National Science Foundation
  Project: CPS: Medium: Collaborative Research: An Actuarial Framework of Cyber Risk Management for Power Grids
  PI: Lingfeng Wang, Co-PI: Wei Wei
- Research and Creative Activities Support (RACAS), $14,350 2017-2018
  Funding Agency: University of Wisconsin-Milwaukee
  Project: New dependence notions with applications in insurance and finance
  PI: Wei Wei
- Competitive Research Funding Schemes, HK$733,800 2016-2017
  Funding agency: Research Grants Council in Hong Kong
  Project: Analysis and Application of Bounds in Insolvency Problem
  PI: Wing Yan Lee, Co-PIs: Shu Li, Wei Wei, Fei Lung Yuen
- Educational Institution Grant, $5,000 2016
  Funding Agency: The Society of Actuaries
  PI: Wei Wei

- Individual Grant Competition, $15,000 — 2014-2015
  Funding Agency: The Society of Actuaries
  Project: Economical Capital and its optimal allocations in the joint-insolvency risk model
  PI: Tianxiang Shi, Co-PIs: Jun Cai, David Landriault, Wei Wei

Student Supervision

- Peng Nie. *How to Improve the Catastrophe Insurance System of China: Experiences from American Catastrophe Insurance System*, Capstone Course Study, 2013
- Evelyn Susanne Gaus. *Optimal Reinsurance with Bivariate Pareto Risks*, Master's thesis, 2014
- Ranadeera Gamage Madhuka Samanthi, Ph.D. thesis entitled "Comparing the riskiness of dependent portfolios", co-supervised with Vytaras Brazauskas, 2016. (Now tenure-track assistant professor at Central Michigan University)
- Alexander Kreienbring. *Optimal deductible: a theoretical analysis from an insured's perspective*, Master's thesis, 2018
- Julian Johannes Dursch, *Optimal insurance with background risk: an analysis in the presence of moderate negative dependence*, Master's thesis, 2018

Service

- Social Committee (Chair since 2015) — August 2013-Present
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Actuarial Science Committee — August 2013-Present
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Colloquium Committee — August 2013- August 2016
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Coordinator of Probability Seminar — Fall 2014
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Thesis Defense Committees for four PhD students — 2015/2016/2017/2018
  Department of Mathematical Sciences, University of Wisconsin-Milwaukee
- Peer-review for the following journals:
  Insurance: Mathematics and Economics
  Scandinavian Actuarial Journal
  ASTIN Bulletin: The Journal of IAA
  European Actuarial Journal
  Journal of Multivariate Analysis
  Journal of Computational and Applied Mathematics
  IMA Journal of Management Mathematics
  Statistics and Probability Letters

Transaction on Reliability: 2015

Communications in Statistics: Theory and Methods: 2014

Honors

- Chinese Government Award for Outstanding Students Studying Aboard 2012
- Dominion of Canada General Insurance Company Graduate Scholarship in Actuarial Science, University of Waterloo 2010-2012
- International Doctoral Student Award, University of Waterloo 2009-2011
- China National Studentship 2004
- First Prize in China Mathematics Olympiad 2002