

Alexander Aurell – Curriculum Vitae

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Academic Appointments

Postdoctoral Research Associate
Princeton University, ORFE Department
Advisor: Prof. René Carmona

PRINCETON, NJ, USA
Mar 2020 – Jul 2021

Education

Ph.D. in Applied and Computational Mathematics
KTH Royal Institute of Technology, Department of Mathematics
Advisor: Prof. Boualem Djehiche, Co-advisor: Prof. Xiaoming Hu
Thesis title: Topics in the mean-field type approach to pedestrian crowd modeling and conventions

STOCKHOLM, SWEDEN
Oct 2014 – Dec 2019

M.Sc. in Engineering Physics
KTH Royal Institute of Technology
B.Sc. in Engineering Physics, 2011
2013: Exchange studies at EPFL, Lausanne, Switzerland

STOCKHOLM, SWEDEN
Aug 2009 – Sep 2014

Industry Experience

Silo AI
AI Scientist
Machine learning and artificial intelligence consultancy for industry.

STOCKHOLM, SWEDEN
Nov 2021 – ongoing

ORC Group
Research Assistant (M.Sc. Thesis Project)
Developed and implemented a pricing model for stock options with the R&D team.

STOCKHOLM, SWEDEN
Jan 2014 – Sep 2014

Research Papers

Publications

Aurell, A., Carmona, R. & Laurière, M. *Stochastic Graphon Games: II. The Linear-Quadratic Case*. Appl Math Optim (2022).

Aurell, A., Carmona, R., Dayanikli, G. & Laurière, M. *Optimal incentives to mitigate epidemics: A Stackelberg mean field game approach*. SIAM Journal on Control and Optimization 0 (2022): S294-S322.

Aurell, A., Carmona, R., Dayanikli, G., & Laurière, M. *Finite State Graphon Games with Applications to Epidemics*. Dynamic Games and Applications (2022): 1-33

Aurell, A. & Djehiche, B. *Behavior near walls in the mean field approach to crowd motion*. SIAM Journal on Applied Mathematics 80.3 (2020): 1153-1174

Aurell, A. & Djehiche, B. *Modeling tagged pedestrian motion: A mean-field type game approach*. Transportation Research Part B: Methodological 121 (2019): 168-183

Aurell, A. *Mean-Field Type Games between Two Players Driven by Backward Stochastic Differential Equations*. Games, 9.4 (2018): 88

Aurell, A. & Djehiche, B. *Mean-field type modeling of nonlocal crowd aversion in pedestrian crowd dynamics*. SIAM Journal on Control and Optimization, 56.1 (2018): 434-455

Working papers

Aurell, A. & Karreskog, G. *Stochastic stability of a recency weighted sampling dynamic*. arXiv:2009.12910

Teaching Experiences

Instructor

Fundamentals of Statistics (first cycle), Princeton University Spring 2021

Assistant Instructor

Optimization, Basic Course (second cycle), KTH Fall 2019, Spring 2019, Fall 2016, Fall 2015, Fall 2014

Systems Engineering (second cycle), KTH Fall 2019, Fall 2017

Financial Derivatives (second cycle), KTH Fall 2019, Fall 2018, Fall 2017

Applied Statistics (first cycle), KTH Fall 2016

Probability Theory and Statistics, Basic Course (first cycle), KTH Spring 2016, Fall 2014

Markov Processes (first cycle), KTH Spring 2015

Multivariate Calculus (first cycle), KTH Spring 2012, Spring 2014

Linear Algebra (first cycle), KTH Spring 2012, Spring 2014

Single-Variable Calculus (first cycle), KTH Fall 2011, Fall 2012, Fall 2013

E-Learning and Educational Tools

KTH Finance Lab Manager of a digital lab environment with stock market data access and built-in quantitative analytics software. Jan 2015 – Dec 2019, part-time

Academedialia Online student mentoring and e-learning content developer (high-school level). Jun 2012 – Aug 2013, part-time

Other

Substitute Instructor, KTH Financial Derivatives (second cycle) Fall 2019, Fall 2018; Probability Theory (second cycle) Fall 2019

Substitute Teacher, Fribergaskolan (Stockholm, Sweden) Middle school level. Aug 2008 – Jun 2009

Other

Awards and Fellowships

Foundation Blanceflor Boncompagni Ludovisi, née Bildt postdoc stipend 2020, 2021

Travel Awards: Styffe foundation 2017, ÅForsk foundation 2018, Knut and Alice Wallenberg foundation 2019

Invited Talks and Seminars

Invited Speaker: Special Session “Stochastic Modeling and Financial Impacts of the Coronavirus Pandemic”, SIAM FME 2021. Special Session “Mean Field Games: New Trends and Applications – Part 2”, ICIAM 2019. Special Session “Mean Field Games”, AIMS 2018.

Invited Research Seminar: 2021 IMSI Chicago, MIT Massachusetts Institute of Technology. 2020 KTH Royal Institute of Technology, Karlstad Universitetet. 2019 Linnéuniversitetet. 2018 Stockholms Universitet. 2017 Uppsala Universitet, LinTek.

Service

Technical Reviewer: Reviewed for SIAM Journal on Applied Mathematics/Journal on Financial Mathematics, Automatica, IEEE Transactions on Automatic Control, IEEE Conference on Decision and Control, System & Control Letters, Applied Mathematics and Optimization, Journal of Dynamic Games, Quantitative Finance, The Journal of Computational Finance, MDPI Risks/Games/Sensors, Journal of Statistical Mechanics: theory and experiment, Socio-Economic Planning Sciences