Armin Kekić

Curriculum Vitæ

Education

since 09/2021 **PhD Student**, Max Planck Institute for Intelligent Systems, Tübingen.
- Machine learning and causality.
- Supervisor: Bernhard Schölkopf.

2016–2017 **Master Studies Physics**, École Normale Supérieure, Paris.
- Focus areas: quantum dynamics, statistical mechanics.

2015–2016 **M.Sc. Mathematical Modelling and Scientific Computing**, University of Oxford, St Hugh's College.
- Focus areas: numerical and analytical solution of differential equations, network theory, machine learning.
- Master thesis: Numerical simulation of composite granular chains for shock attenuation. Wrote entire simulation software (Python). Supervisor: Robert A. Van Gorder.

2011–2015 **B.Sc. Physics**, University of Heidelberg.
- Focus areas: quantum dynamics, numerical simulation of physical systems.
- Bachelor thesis: Theoretical investigation (computer simulation and mathematical modelling) of the Rydberg-atom excitation process used in cold-atoms experiments. Supervisors: Adrien Signoles and Matthias Weidemüller.

Experience

02/2018 – 08/2021 **Applied Scientist**, Zalando SE, Article Sales Forecast.
- Developing and deploying forecasters used for algorithmic price optimisation.
- Modelling sales and demand using Seq2Seq models (e.g. LSTMs, Transformer).
- Numerical simulation of pricing environment in order to find the right forecasting error metric as a proxy for profit made through price optimisation.

03/2017 – 01/2018 **Researcher**, *Physics of Networks*, Institute for Computer Science and Physical Institute, University of Heidelberg.
- Using methods from machine learning and network science to describe atomic spectra beyond the scope of quantum mechanics.
- Supervisor: Matthias Weidemüller.

07–09/2014 **Research Intern**, *Experimental foundations of quantum computing*, Centre for Quantum Technologies, National University of Singapore.
- Design of an optical experimental set-up for Rydberg-atom imaging using electromagnetically induced transparency (EIT).
- Supervisor: Wenhui Li.

Scholarships

2016–2017 Scholarship awarded by École Normale Supérieure.

Tübingen / Berlin, Germany
arminkekic.com • *armin_kekic*

2016 Scholarship awarded by the Barbinder Watson Trust Fund, St Hugh's College, Oxford for a summer workshop in applied mathematics at Universidad Complutense de Madrid.

2014 RISE-worldwide scholarship awarded by the German Academic Exchange Service (DAAD).

2012-2017 Full scholarship by the German National Academic Foundation (Studienstiftung des deutschen Volkes).

Languages

German native speaker

English full professional proficiency

Bosnian fluent

French basic knowledge

Publications

Julius von Kügelgen, Michel Besserve, Wendong Liang, Luigi Gresele, **Armin Kekić**, Elias Bareinboim, David M. Blei, and Bernhard Schölkopf. Nonparametric identifiability of causal representations from unknown interventions. *arXiv preprint arXiv:2306.00542*, 2023.

Wendong Liang, **Armin Kekić**, Julius von Kügelgen, Simon Buchholz, Michel Besserve, Luigi Gresele*, and Bernhard Schölkopf*. Causal component analysis. *arXiv preprint arXiv:2305.17225*, 2023.

Armin Kekić, Jonas Dehning, Luigi Gresele, Julius von Kügelgen, Viola Priesemann, and Bernhard Schölkopf. Evaluating vaccine allocation strategies using simulation-assisted causal modeling. *Cell Patterns*, 2023.

Cian Eastwood, Andrei Liviu Nicolicioiu, Julius Von Kügelgen, **Armin Kekić**, Frederik Träuble, Andrea Dittadi, and Bernhard Schölkopf. DCI-ES: An extended disentanglement framework with connections to identifiability. In *The Eleventh International Conference on Learning Representations*, 2023.

David Wellnitz*, **Armin Kekić***, Julian Heiss, Michael Gertz, Matthias Weidemüller, and Andreas Spitz. A network approach to atomic spectra. *arXiv preprint arXiv:2202.04342*, 2022.

Armin Kekić and Robert A Van Gorder. Wave propagation across interfaces induced by different interaction exponents in ordered and disordered hertz-like granular chains. *Physica D: Nonlinear Phenomena*, 2018.

Vladislav Gavryusev, Miguel Ferreira-Cao, **Armin Kekić**, Gerhard Zürn, and Adrien Signoles. Interaction enhanced imaging of rydberg p states: Preparation and detection of rydberg atoms for engineering long-range interactions. *The European Physical Journal Special Topics*, 2016.

Invited Talks

04/2023 *Evaluating vaccine allocation strategies using simulation-assisted causal modeling.* Workshop on Causal Representation Learning at MPI-IS Tübingen

04/2023 *Causal modeling with nasty data.* Data Science Exchange at Bayer AG Berlin

01/2023 *Evaluating vaccine allocation strategies using simulation-assisted causal modeling.* ELLIS Unconference La Palma

02/06/2023