Martin Klein

Doctoral Candidate at DLR

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https://0-k.github.io/research/

EDUCATION

- **Helmholtz Association** — Stuttgart and Karlsruhe, Germany
  Member of the Helmholtz Research School on Energy Scenarios — *May 2015 – Present*

- **University of Stuttgart** — Stuttgart, Germany
  Doctoral Candidate at the Faculty of Energy Engineering — *Oct 2014 – Present*

- **Delft University of Technology** — Delft, The Netherlands
  Visiting Researcher at the Faculty of Technology, Policy and Management — *Oct 2016 – Dec 2016*

- **University of Freiburg** — Freiburg, Germany
  Master of Science in Renewable Energy Management; 1.0 (GPA: 4.0) — *Oct 2011 – Dec 2013*

- **KTH Royal Institute of Technology** — Stockholm, Sweden
  Exchange Semester in Physics — *Jan 2011 – Jun 2011*

- **RWTH Aachen University** — Aachen, Germany
  Bachelor of Science in Physics; 1.3 (GPA: 3.7) — *Oct 2007 – Sep 2010*

EXPERIENCE

- **German Aerospace Center (DLR)** — Stuttgart, Germany
  Doctoral Candidate, Department Energy Systems Analysis — *Oct 2014 – Present*
  - **AMIRIS** - Co-developed a Java agent-based model of the German electricity market, with a particular focus on the integration of high shares of renewable energy sources and long-term market price scenarios
  - **Prosumer Policy Simulator** - Designed and co-developed a Python simulation tool to analyze solar home systems under real-time pricing and other regulatory regimes
  - **Investment Modeling** - Designed and developed an analytic model to predict installed solar home systems per month, incorporating insights from behavioral economics

- **Fraunhofer Institute for Solar Energy Systems (ISE)** — Freiburg, Germany
  Graduate Research Assistant, Department Process Technology — *Jul 2012 – Jul 2014*
  - **PEM Fuel Cells** - Technology assessment on how to produce automotive PEM fuel cells, additionally prepared first proof-of-concept experimental catalyst layer samples
  - **Photovoltaics** - Teaching and research assistance on production technology for photovoltaics and global trends in solar markets

- **German Aerospace Center (DLR)** — Stuttgart, Germany
  Research Intern, Department Energy Systems Analysis — *Jul 2011 – Sep 2011*
  - **High-Temperature Process Heat** - Technology assessment on decarbonization potentials for industrial high-temperature process heat
  - **Learning Curves** - Research on cost degression curves for renewable energy sources

- **Jülich Research Center** — Jülich, Germany
  Research Assistant, Institute of Energy and Climate Research — *Apr 2010 - Jul 2010*
  - **Photovoltaics** - Research on light-scattering properties of thin solid films for solar cells

Skills

- **Programming** - Python, Java
- **Methods** - Agent-based modeling, Monte Carlo simulation, optimization (LP, genetic algorithm, basin hopping)
- **Languages** - *native*: German, *fluent*: English, *basic*: French

Recent Publications and Talks

- **Energy Scenarios**

  Focus is to understand how to construct and assess energy futures
  - ○ **Benchmarking VRE cost assumptions with awarded renewable energy auctions – A comparative assessment of global energy scenarios** - Klein, M., Xiao, M., Junne, T., 2018. *Energy Scenarios Conference*, Karlsruhe, Germany
  - ○ **Mid- to long-term modeling of energy market prices** - Klein, M., 2018. *Workshop of the German section of the IAEE*, Cologne, Germany

- **Agent-based modeling**

  Focus is to understand how to model complex energy systems
  - ○ **Models within models - Agent-based modeling and simulation in energy systems analysis** - Klein, M., Reeg, M., Frey, U. *Journal of Artificial Societies and Social Simulation*, under review
  - ○ **Assessing the plurality of actors and policy interactions: Agent-based modeling of renewable energy market integration** - Deissenroth, M., Klein, M., Nienhaus, K., and Reeg, M., 2017. *Complexity*, vol. 2017, DOI: 10.1155/2017/7494313

- **Policy Simulation**

  Focus is to understand how to regulate distributed energy systems
  - ○ **The system-friendliness of solar self-consumption under different regulatory regimes** - Klein, M., Ziade, A., Deissenroth, M., 2018. *International Association for Energy Economics (IAEE), International Conference*, Groningen, The Netherlands
  - ○ **When do households invest in solar photovoltaics? An application of prospect theory** - Klein, M. and Deissenroth, M., 2017. *Energy Policy*, 109, pp.270– 278, DOI: 10.1016/j.enpol.2017.06.067