

Dr. Markus Beck



Background

- Since October 2009: Research Assistant at the Department of Cognitive Systems, University of Tübingen ([DBU](#) research fellowship)
- February 2009 - September 2009: Assistant at the Department of Computer Architecture and the Center for Applied Geoscience, University of Tübingen
- October 2002 - December 2008: Studies of Computer Science (Bioinformatics) at the [University of Tübingen](#)
- September 1993 - Juni 2002: Gymnasium Berchtesgaden

Research Interests

- Optimization & Evolutionary Algorithms
- Geoscience
- Renewable Energy
- Engineering
- Shallow geothermal energy and geothermal heating

Current Projects

- Design and optimization of ground source heat pump fields

Publications

- [1] Markus Beck, Peter Bayer, Michael de Paly, Jozsef Hecht-Mendez, and Andreas Zell. Geometric arrangement and operation mode adjustment in low enthalpy geothermal borehole fields for heating. *Energy*, 49:434--443, 2013.
- [2] Jozsef Hecht-Mendez, Michael de Paly, Markus Beck, and Peter Bayer. Optimization of energy extraction for vertical closed-loop geothermal systems considering groundwater flow. *Energy Conversion and Management*, 66:1--10, 2013.
- [3] Markus Beck, Michael de Paly, Jozsef Hecht-Mendez, Peter Bayer, and Andreas Zell. Evaluation of the Performance of Evolutionary Algorithms for Optimization of Low-Enthalpy Geothermal Heating Plants. In *Genetic and Evolutionary Computation Conference, GECCO-2012*, pages 1047--1054, Philadelphia, USA, July 2012.
- [4] Michael de Paly, Jozsef Hecht-Mendez, Markus Beck, Philipp Blum, Andreas Zell, and Peter Bayer. Optimization of energy extraction for closed shallow geothermal systems using linear programming. *Geothermics*, 43:57--65, 2012. [[DOI](#)]
- [5] Markus Beck, Jozsef Hecht-Mendez, Michael de Paly, Peter Bayer, Philipp Blum, and Andreas Zell. Optimization of the energy extraction of a shallow geothermal system. In *Proceedings of the IEEE Congress on Evolutionary Computation (CEC)*, pages 3622--3628, Barcelona, Spain, July 2010. [[DOI](#)]

Posters and selected talks

Strategic optimization of large-scale vertical closed-loop shallow geothermal systems

J. Hecht-Méndez, M. de Paly, M. Beck, P. Blum and P. Bayer

Talk given at 'EGU General Assembly 2012' , April 24, 2012 - Vienna, Austria

Mathematische Optimierung von geothermischen Sondenfeldern - Was können wir gewinnen?

P. Bayer, M. Beck, M. de Paly, P. Blum and J. Hecht-Méndez
Poster presented at 'FH-DGG Tagung (Fachsektion Hydrogeologie in der Deutschen
Gesellschaft für Geowissenschaften)' , May 16 - 20, 2012 - Dresden, Germany

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