

# Systems Biology Seminar Talk

## Mathematical modeling of network structures in biological systems

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**Time: Wednesday, January 20, 2016 at 2 p.m.**

**Place: Lecture hall (Room 0.106)  
Allmandring 31, Stuttgart-Vaihingen**

Abstract:

Network structures can be detected in almost every biological system, since they are often responsible for the transport of fluids, nutrients or oxygen. Such a network structure is for example a blood vessel network supplying organs with oxygenated blood or removing metabolic waste from the tissue. A further example is the root network of a plant, ensuring the water supply of the plant. In this talk, dimensional reduced models for flow and transport in such networks are presented. Moreover, suitable numerical devices for these models are discussed. In order to illustrate the performance of the resulting algorithms, they are applied to issues arising in the context of medical research and botany.

CV:

I was born on February 14, 1985 in Regensburg, Germany. My school career started in 1991 joining elementary school and was completed at the Werner-von-Siemens Gymnasium in 2004. After nine months of civilian service, I began to study Applied Mathematics (Technomathematik) at the University of Technology Munich. On June 1, 2010, my studies were finished. In the same year, my doctoral studies began at the chair for Numerical Mathematics (University of Technology Munich) under the supervision of Prof. Dr. Barbara Wohlmuth. Since October 2014, I am a member of the group of Prof. Dr. Rainer Helmig at the Department of Hydromechanics and Modelling of Hydrosystems in Stuttgart. In June 2015, I received my doctoral degree (Dr. rer.nat.).

Inviting Institute: Institute for Modelling Hydraulic and Environmental Systems. In case you are interested to meet Dr. Koepl, please contact **Prof. Dr.-Ing. Rainer Helmig, IWS (e-mail: [Rainer.Helmig@iws.uni-stuttgart.de](mailto:Rainer.Helmig@iws.uni-stuttgart.de))**.  
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