

Bonn - Köln Computational Neuroscience Seminar

Towards in vivo histology using quantitative MRI: application and validation strategies

PD Dr. Siawoosh Mohammadi

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Talk Abstract

Understanding basic mechanisms underlying normal and diseased human brain developments crucially depends on reliable knowledge of its anatomical microstructure and connectivity. Our long-term goal is to estimate microstructural properties non-invasively in living subjects using biophysical models of the MRI signal.

We are developing novel methods for fusion of high-resolution quantitative MRI (qMRI) to enable MRI-based in vivo histology (hMRI) in the brain and spinal cord. The main focus is to develop valid MRI metrics that characterize key white matter microstructure properties as known from ex vivo histology (e.g. myelin density, fiber density, and the g-ratio – i.e. the ratio between inner and outer fiber diameter).

PD Dr. Siawoosh Mohammadi

Siawoosh Mohammadi obtained his PhD in Münster, Germany, with a study on optimizing diffusion MRI in a clinical setting (2009). He worked as Postdoc and physicist at the WTCN, UCL (2009–2014). Since 2014 he works at the Department of Systems Neuroscience, Medical Center Hamburg-Eppendorf, and was promoted to a Principal Investigator in 2017. He was author of several book-chapters (incl. the 2nd edition of Quantitative MRI of the Brain by Cercignani, Nowell, and Tofts), and Reviewing Editor in Frontiers in Psychiatry and Frontiers in Neuroscience. In 2013 he received the Annual Early Career UCL Investigator Award in Neuroimaging Techniques. Siawoosh Mohammadi is the creator of the ACID-SPM toolbox for diffusion MRI with growing user base and annual workshops and he is part of the Developer Team of the hMRI toolbox.

For more information, see: <https://goo.gl/NKCgKn>

Friday, 10th February 2023, 12 pm

In-Person:

University of Bonn Medical Center
Epileptology/ Building 83
Seminar room (room 266), Ground Floor

[Directions](#)

Online: <https://uni-bonn.zoom.us/j/62321512510?pwd=ZC9SMdDBRGoxQ1ZLamwvYjZBc0pXUT09>

Meeting-ID: 623 2151 2510

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