Universität Rostock
Fakultät für Informatik
und Elektrotechnik
Institut für Angewandte
Mikroelektronik und Datentechnik

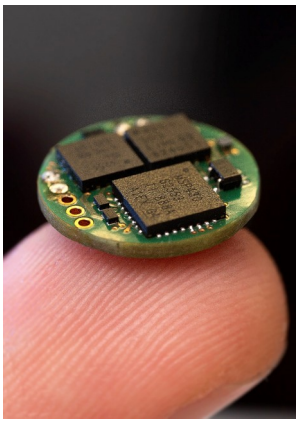
Postadresse:
18051 Rostock

Besucher
R.- Wagner Str. 31
18119 Rostock

Fon +49(0)381 498-7290

Jakob.Heller@uni-rostock.de
http://www.imd.uni-rostock.de

Voltage Headroom estimation with SystemC-AMS modelling of in vivo Impedance Data.



In vivo neurostimulators are used for a multitude of applications with a wide variety of different requirements. Prototyping new neuromodulators heavily relies on assembling different, separately developed IP's. This deems virtual prototyping at a high abstraction level inevitable.
The most important optimization of these neurostimulators in rodents is towards power consumption and thus the needed Voltage headroom. However to estimate the minimum headroom we have to simulate the impedance development of the corresponding electrodes in the rodent brain.
To achieve this we try to model in vivo data with the help of the SystemC-AMS extension.

The following tasks shall be completed:

- Research and documentation of existing Voltage Headroom estimations for neurostimulators
- Apply fitting routine to estimate the rodent double layer over different electrodes and over time
- Implementation of a ELN Model for the double layer over time with SystemC-AMS
- Realization of a functional prototype and testing regarding unseen impedance data
- Estimation of the Implant power consumption for different voltage headrooms
- Documentation of the results

Project type	Master's thesis, Pre-Thesis
Requirements	Experience in programming (e.g. C++, Python)
Supervision	M.Sc. Jakob Heller, Prof. Dr. Ing Dirk Timmermann
Contact	M.Sc. Jakob Heller – Jakob.Heller@uni-rostock.de
Telephone	0381 / 498 - 7290
Office	Institut MD, Building 1, Room 1339