

PhD position at NaMLab

FTJ Device Development, characterization and integration

NaMLab is looking for a PhD candidate in the field of device development of ferroelectric tunneling junctions (FTJ). The work focuses on hafnium-oxide based FTJ devices that are to be manufactured at NaMLab and to be co-integrated into the BEOL of CMOS test chips. The circuits will be designed together with a project partner and will be manufactured at a foundry. The final objective is the adoption of multi-level cells (MLC) for reconfigurable non-volatile digital logic gates based on ternary logic. Main tasks will be the research and optimization of FTJ devices. Moreover, the electrical characterization and modeling of the electrical behavior are integral part of the research, targeting at the optimization of electrical characteristics such as on/off ratio, on-current density, data retention and cycling endurance. The technology development should be performed in close collaboration with the development of the circuit concepts that adopt this novel FTJ devices (design technology co-development).

Responsibilities:

- Development of FTJ devices
- Electrical characterization of the manufactured devices
- Modeling of switching as well as conduction mechanisms
- Communication with project partners and reporting
- Basic circuit design of interfacing circuits to the FTJs

Your profile:

- M.Sc. / M.Eng. in electrical engineering / physics
- Well-grounded knowledge on semiconductor manufacturing and device physics
- Basic knowledge in analog circuit design
- Good technical comprehension
- Ability to work in a team environment

The following skills are a plus:

- Expertise in electrical characterization
- Experience in working in a clean room environment
- Expertise in circuit design using Cadence

Period:

- Planned starting date: September 2021
- Duration: 3 years

We offer:

The salary will be based on German research organization standards.

For further information please contact:

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