Scientist position in circuit design and characterization for ferroelectric device based neuromorphic accelerators (predoctoral - PhD candidate)

Devices based on ferroelectric hafnia such as ferroelectric capacitors, FeFETs or FTJs promise low-energy solutions in beyond-von Neumann computing architectures and neuromorphic accelerators. These require novel circuitry adapted to the specific benefits and challenges of ferroelectric devices (e.g. low readout currents, multilevel device operation, variabilities stemming from the device integration). In this project you will characterize and model ferroelectric devices and circuits, and design novel ferroelectric bitcells, computing primitives as well as drivers or read-out circuitry in an analogue / digital mixed-signal approach. You will work closely with materials engineers to match device behaviour to appropriate cell design and vice versa. The results of the scientific work can be used to obtain a PhD in Electrical Engineering at the TU Dresden.

Responsibilities:

- Characterisation of ferroelectric devices using automatic probe stations
- Development and application of ferroelectric device models
- Design of ferroelectric device-based circuit blocks for neuromorphic accelerators
- Design of sensing circuitry for ferroelectric devices
- Participation in EU projects with international collaborators

Your profile:

- Masters in Electrical Engineering, Computer Science, Physics or similar
- Basic understanding of analogue circuit design and semiconductor device physics
- Self-organised and driven approach
- Fluent in German or English
- Good communication skills

The following skills are a plus:

- Experience working with Cadence or similar
- Experience working with TCAD models
- Experience in planning and executing scientific work

We offer:

- A young, welcoming, international workplace
- A strong team consisting of PhD students, Postdocs from different fields and technical staff
- Focused guidance during your PhD studies
- Experience collaborating internally and internationally, with academia and industry
- Experience working with high-end characterization and simulation tools

Check also our video on research on capacitors at Namlab:

https://www.youtube.com/watch?v=_e8pqf5RTqw

We value and encourage the diversity of our employee skills and therefore welcome all applications - regardless of age, gender, nationality, ethnic and social origin, religion, ideology, disability, sexual orientation and identity.

The position is initially limited to 3 years. We offer you a long-term perspective with a versatile and interesting field of activity in microelectronics research.

For further information please contact:

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