



Master thesis “RRAM Technology based Analog Signal Processing”

Job-ID: 3052/21 | Department: System Architectures | Limitation: 6 month with option of extension | Earliest Entry Date: 01.06.2021 |

We offer the possibility to work parallel as a student or research assistant, with a working time of max. 19h per week, remuneration according to the guidelines of the state of Brandenburg on the working conditions of research and student assistants.

IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultra high-frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. IHP employs approximately 330 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25 μm -SiGe-BiCMOS technologies, located in a 1.500 m² cleanroom.

Master thesis project:

In-Memory computing based on RRAM cells promising high performance low power dissipation computing is an emerging field of research. The goal of this project is to analyze the possibilities of applying standardized RRAM cells for time discrete analog signal processing using the advantage of an analog signal representation but still maintaining the traditional “digital-like” synthesis and design approach.

Your tasks:

- Analyzing and evaluating the concept of analog signal processing, based on in-memory-computing with RRAM cells
- Definition and implementation of test vehicles (e.g. FIR filter, Crosscorrelator, Equalizer) based on the design environment of IHP PDK
- Evaluating the potential advantages and disadvantages of implemented test vehicles against traditional fully digital solutions
- Potentially physical realization of a test chip

Your qualifications:

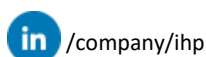
- Bachelor's degree in the field of electrical engineering
- Good knowledge of analog and digital circuits
- Basic understanding of digital signal processing
- Fundamental hands-on experience in the design and simulation of integrated circuits using CAD tools (Cadence Virtuoso, Spectre) would be desirable
- Very good English language skills

Your team:

You will be member of the research group “Fault Tolerant Computing”, whose focus is the development of reliable in-memory computing architectures. A motivated and committed team, consisting of both experienced and younger scientists, is looking forward to welcoming you. Wide experience in chip design and test is available to support your work. Flat hierarchies and mutual support are important to us. We see diversity of perspectives as an opportunity for the team and we strive for a balanced gender representation.

Our offer:

You have the possibility to work in a dynamic and multinational research institute for microelectronics and to gain insights into the work of renowned scientists in future-oriented research projects. During your stay at IHP, you will have flexible working hours and the possibility to work off-site. After successful completion of the master thesis project, a PhD degree can be pursued and will be encouraged.



The compatibility of work and family is highly valued. More information about our scientific excellence and the working environment at IHP can be found [on our website](#).

IHP is TOTAL E-QUALITY-certified for equal opportunities for women and men at work and actively pursues the equality of all gender and all groups of people. We promote the professional development of women and strongly encourage them to apply. Disabled applicants, qualified according to the above criteria, will be given preference over other candidates with equivalent relevant qualifications.

Your application:

Have we sparked your interest? Then we look forward to receiving your application via our [online application form](#). For further information regarding the position please contact Prof. Dr. Milos Krstic: career@ihp-microelectronics.com