



## Master thesis “Charge-redistribution based in-memory computing for neuromorphic systems”

Job-ID: 5011/22 | Department: Circuit Design | Limitation: 6 month with option of extension | Earliest Entry Date: 01.03.2022  
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 350 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25  $\mu\text{m}$ -SiGe-BiCMOS technologies, located in a 1500 m<sup>2</sup> cleanroom that meets the highest industrial nanotechnology requirements.

### Master thesis project:

In-Memory computing targets high performance low power computing and is an emerging field of research. The goal of this project is to analyze and implement a vector-matrix multiplier using a technology node independent concept, evaluate its accuracy and speed limitations.

#### The Research/Position:

- Analyzing and evaluating of charge-redistribution based in-memory-computing concepts
- Implementation of a matrix-vector multiplier in IHP design environment
- Evaluating the accuracy and speed limitations of the chosen concept
- Potentially physical realization of a test chip
- After successful completion of the master thesis project, a PhD degree can be pursued and will be encouraged.

#### Your Qualifications:

- Bachelor's degree in the field of electrical engineering
- Good knowledge of analog and digital circuits
- 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.



### 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. 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 until **February 15<sup>th</sup>, 2022** via our [online application form](#).

For further information about the position, please contact Dr. Philip Ostrovskyy: [career@ihp-microelectronics.com](mailto:career@ihp-microelectronics.com).