



## PhD or Postdoc position (m/f/d) for the engineering of cryptographic ASICs resistant against a broad spectrum of physical attacks (as a part of design methodology for engineering resilient systems)

Job-ID: 3012/22 | Department: System Architectures | Salary: according TV-L | Working time: 40h/week (part-time work option) | Limitation: initially 2 years with option of extension | Entry Date: as soon as possible

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.

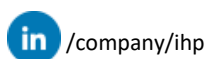
### The position:

As a member of the Hardware Security group within the department System Architectures, you will contribute to the latest research at IHP. The following topics and tasks are to be dealt with:

- Hardware implementation of cryptographic algorithms
- Chip and FPGA design and test of the cryptographic hardware implementations
- Automation of the design synthesis flow
- Simulation of Power Traces and/or Fault Injections
- Evaluation of the resistance of the implemented cryptographic algorithms against selected attacks
- Presentation of the outcomes to international communities
- Integration of developed hardware in project relevant applications
- Preparation, supervision, and implementation of student projects and internships

### Do you aspire a doctorate?

We highly encourage you to pursue your goal. Within the doctorate in the area of design methodology for engineering resilient systems, it is intended to implement a dynamically reconfigurable redundancy in hardware and to investigate its effectiveness as a countermeasure against physical attacks. The doctorate





is supported by an experienced supervisor and accompanied within the framework of a supervision agreement. We aim together for completion within 3-5 years. After one and a half years, the topic will be finally defined and the contract duration will be adjusted accordingly by mutual agreement to the foreseeable doctoral period.

### **You already have finished a doctorate?**

You will broaden and deepen your expertise and have opportunities to build your reputation as a scientist in international and interdisciplinary projects with global visibility at the edge of top-notch technologies.

### **Your qualifications:**

The successful candidate has a master's degree or a PhD in Electrical Engineering, Computer Engineering or a comparable field. The candidate should have a strong background and excellent knowledge of mathematic, digital circuit architecture and design. A background in fault injection and/or side-channel analysis attacks and in hardware architectures for cryptographic chips is highly beneficial. Practical experience in ASIC implementation and ASIC design flow and tools (such as Cadence and Synopsys) is appreciated. Skills in the following programming/specification languages are essential: VHDL or Verilog, and C or C++. Industrial experience would be an advantage.

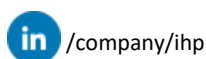
You are also a strong team player. We are looking for a team member, who is able to structure his or her own work and to bring a well-organized and systematic way of working into the cooperation with creative minds. You are an ideal match for this position, when you have experimental, analytical and problem-solving skills, very strong communicative skills and the ability to quickly learn how to operate the latest technical equipment including various software. It is necessary that you confidently handle the English language. Knowledge of the German language is welcome. The deepening of German language skills is expected and highly encouraged, for example in in-house language courses and intensive courses.

### **Our Offer:**

Do research in a challenging, multinational environment giving you excellent career opportunities. An orientation guide will help you to quickly integrate into the institute and to familiarize yourself with the field.

It is important to us to support the individual career developments (e.g. conferences, advanced trainings) as well as the personal needs of our employees by offering 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. Zoya Dyka: [career@ihp-microelectronics.com](mailto:career@ihp-microelectronics.com).