

Braunschweig, March 5th 2021

JOB OFFER Nr. 21-QVLS-3.2B

Braunschweig University of Technology, with its 18.500 students and about 3.700 employees, is the largest University of Technology in northern Germany. We stand for a strategic and performance-oriented thinking and acting, for relevant research, motivated teaching and a successful transfer of knowledge and technology into industry and society. We are consequently advocating family friendliness and equal opportunities. Our campus is located in one of the most research-oriented regions of Europe.

The „Quantum Valley Lower Saxony“ (QVLS-Q1) research consortium, a collaboration between Braunschweig University of Technology, Leibniz University Hannover and PTB, aims at realizing a 50-Qubit quantum computer based on trapped ions.

In the frame of this project, the Institute for CMOS Design is looking for talents worldwide, who want to join our team:

PhD student (m/f/d) in Integrated Circuit Design for Qubits focussing on Analog/RF Integrated Circuits in CMOS (Team 3.2)

The position is temporary (3 years) with a possibility of extension. The location is Braunschweig. Remuneration will be in line with the current German collective pay agreement up to TV-L E13, depending on personal qualification and task assignments.

The control of quantum states of trapped ions is one of the most advances approached on the way towards error tolerant programmable quantum computers. Base on chip technology for ion traps in combination with microwave control, a 50-Qubit-System will be built in QVLS-Q1. Expert teams will focus on all aspects from chip design and fabrication with integrated optics and electronics to electronic circuit design, laser technology and software design for various applications.

We are part of an excellent research environment with access to the unique infrastructure of the whole consortium. The team is working in an excellent national and international network and is participating – besides QVSL-Q1 – in various other large collaborative projects, including the Excellence Cluster „QuantumFrontiers“.

Tasks and assignments:

- Active participation in the Team im Team 3.2 “CMOS-Design and CMOS Integration”
- Design of analog, mixed-signal and high-frequency integrated circuit for Electronic control of the ion traps, e.g. microwave pulses (GHz) for manipulating the qubits
- Design of highly-integrated low-power and low-noise RF front-ends
- RF system-level concept development, level calculations and system modeling
- High-level integration of circuits into a System-on-Chip and top-level simulations
- Verification in measurement of the circuits on-wafer and on board

Required profile:

- Master degree in electrical engineering, physics or relevant field
- Knowledge in the field of analog, mixed-signal and/or RF integrated circuits
- Understanding in the field of microwave engineering and RF systems
- Experience with Cadence Virtuoso is a plus
- Experience with electromagnetics field simulation tools is a plus
- Good MATLAB skills are advantageous
- Expert knowledge in one or more of the above-mentioned research areas
- High level of personal motivation, responsibility and continuous learning abilities
- Pronounced communication and team building capabilities
- Openness to work in a diverse, international working environment
- Very good knowledge of the English (and possibly German) language
- Readiness to perform research in partner labs at various locations when necessary

For further information please contact:

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Website: www.qvls.de

Braunschweig University of Technology offers flexible part-time models whenever possible for supporting family-friendliness. Disabled persons are preferred in case of equal suitability. Written evidence has to be presented in the application. Applications from applicants of all nationalities are welcome. Braunschweig University of Technology aims to reduce under-representation in all areas and positions as defined by the NGG. Therefore, applications from women are particularly welcome in this case.

Personal data will be stored for the purpose of carrying out the application procedure. Application costs cannot be reimbursed. Please understand that applications that are not considered can only be returned against a self-addressed and stamped envelope. By submitting your application, you agree that your application may be forwarded internally to parallel advertising procedures, provided that these fit your profile better.

Are you interested? In this case we are looking forward to your application. Please send your application via email (V.Issakov@tu-braunschweig.de) as a single PDF document. In case this is not possible, a written application may be sent to: Institut für CMOS Design, Frau Selma Dormeier, Technische Universität Braunschweig, Hans-Sommer-Straße 66, 38106 Braunschweig).

Reference Number 21-QVLS-3.2B

Application deadline: **March 29th 2021**

Prof. Dr. Vadim Issakov