The Cluster of Excellence ‘Center for Advancing Electronics Dresden’ (cfaed) offers a fixed-term position as

**Research Fellow**

(Subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

**Research area:** Resource management and thermal-aware design for 3D architectures

**cfaed Investigators:** Prof. Dr. Akash Kumar

**cfaed research path:** Highly adaptive energy-efficient computing (HAEC), Resilience Path, Orchestration Path

**Terms:** Starting date **01.10.2015**, fixed-term until 31.10.2017. Subject to the continued third-party funding of the cluster after 2017, the extension of the contract may be possible. The period of employment is governed by § 2 Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz – WissZeitVG). Balancing family and career is an important issue. The post is basically suitable for candidates seeking part-time employment. The position offers the chance to obtain further academic qualification (e.g. habilitation thesis).

**Position and Requirements**

We are in the process of starting a new Chair of Processor Design with the long-term vision of shaping the way future electronic systems are to be designed and programmed. Most current systems are implemented in a 2D IC, which seems to become complex, inefficient and uneconomic with the advancement in the process technology due to inefficient scalability of interconnects with respect to the logic. A viable alternative to cater for such limitations of interconnects is a 3D IC, where multiple layers of logic can be stacked vertically and they can be connected by small high speed vertical interconnects. Integration of various types of cores in a 3D IC provides several advantages, but at the cost of increased power density within the chip which results in serious thermal problems, affecting performance and reliability of the system. While there are few works that target to mitigate the thermal issues in 3D multi-core architectures, very few target real-time applications with strict timing deadlines. In this project, investigations will be performed to identify a promising 3D multi-core architecture to support a set of real-time applications and to devise techniques for thermal-aware mapping of different simultaneous active applications while guaranteeing their performance (throughput) constraints.

The successful candidate will: develop novel resource management techniques for 3D architectures to avoid thermal hotspots; design and evaluate scheduling algorithms to ensure timely completion of application in 3D systems; help the chair to organize research projects. We aim at attracting the best talent in the respective research fields and expect the following: an outstanding university degree (Master or equivalent) and PhD degree in computer science, electrical engineering or a related field; proven track record by publications/patents in the area of multiprocessor embedded systems; good programming skills (especially on scripting, assembly-level and C languages) as well as good hardware-design skills (especially using VHDL/Verilog and component-based design) are important; experience in using FPGAs
for design will provide an added advantage; very good interpersonal and communication skills; in particular, the ability to effectively work in collaborative research efforts; an independent, target- and solution-driven work attitude; inter- and multidisciplinary thinking; strong motivation and interest to join one of the most ambitious interdisciplinary research clusters; fluency in English - written and oral.

**What we offer**

You will join a team of enthusiastic scientists who pursue creatively their individual research agenda inspired by the cluster’s innovative approach and support. Your postdoc research will be fostered by the cfaed philosophy to promote young researchers which includes: access to state of the art research of leading academic institutes; international postgraduate program; possibility to earn (seed) grants of up to € 10.000; promotion of gender equality and family-friendly work environment.

Informal enquiries can be submitted to Prof. Dr. Akash Kumar, Email: akash.kumar@tu-dresden.de.

Applications from women are particularly welcome. The same applies to people with disabilities.

**Application Procedure**

Your application (in English only) should include: motivation letter, CV, copy of degree certificate, transcript of grades (i.e. the official list of coursework including your grades) and proof of English language skills.

Complete applications should be submitted preferably by e-mail as one single pdf document quoting the reference number PostDoc1507_Z-PD in the subject header to recruiting.cfaed@tu-dresden.de (Please note: We are currently not able to receive electronically signed and encrypted data) or alternatively by post to: TU Dresden, cfaed, Frau Dr. P. Grünberg, 01062 Dresden, Germany. The closing date for applications is **28.07.2015** (stamped arrival date of the university central mail service applies). Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

**About cfaed**

cfaed is a cluster of excellence within the German Excellence Initiative. It brings together 300 researchers from TU Dresden and 10 other research institutions in the areas of Electrical and Computer Engineering, Computer Science, Materials Science, Physics, Chemistry, Biology, and Mathematics. cfaed addresses the advancement of electronic information processing systems through exploring new technologies which overcome the limits of today’s predominant CMOS technology. [https://www.cfaed.tu-dresden.de/](https://www.cfaed.tu-dresden.de/)

cfaed has initiated to create five new Professorships at TU Dresden to further strengthen cfaed’s research areas. These strategic positions are being filled with distinguished scientists to enhance the Cluster’s research output and increase its international reputation. The Chair of Processor Design is one of these new positions and will contribute to the Organic/Polymer Path.

**About TU Dresden**

The TU Dresden is among the top universities in Germany and Europe and one of the eleven German universities that were identified as an ‘elite university’ in June 2012. As a modern full-status university with 14 departments it offers a wide academic range making it one of a very few in Germany.