Mittwoch, 27.05.2015, um 16:00 Uhr
Ort: Reichenhainer Str. 90; Zentrales Hörsaal- und Seminargebäude, Raum 2/N013

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**Memristive Devices – The Key Enabler for Novel Computing-in-Memory Architectures**

Redox-based resistive switches (ReRAM) are an emerging class of non-volatile memory devices, which could pave the path towards novel highly energy-efficient computer architectures. The logic-in-memory concepts for ReRAM technology try to break up the conventional separation of arithmetic logic unit (ALU) and memory. By combining ALU and memory these concepts widen the von Neumann bottleneck by using the ReRAM devices arranged in passive nano-crossbar arrays for both memory and calculation units. In passive arrays either a bipolar selector or complementary resistive switch (CRS) configuration is required to avoid parasitic currents. The corresponding CRS-logic is functional complete and enables efficient sequential adder implementations directly within the memory. To further develop logic-in-memory concepts highly accurate memristive circuit models are required to enable large scale array simulations. Three basic evaluation criteria for memristive models are most relevant: the non-symmetry of the I-V characteristic, the exponential nature of the SET switching kinetics, and connected device behavior. CRS devices also enable neuromorphic applications: So called associative capacitive networks (ACN) allow architectures for image and speech recognition, intelligent database search engines, and flexible decision making processes. ACNs facilitate the detection of similarity between a search pattern and numerous stored patterns, in particular the so called Hamming Distance.

Alle Zuhörer sind ab 15:45 zum Kaffee vor dem Hörsaal eingeladen.