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.

Informationen zum Vortrag erteilt:
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