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FH MONDAY

28 August 2017

Hot Chips Spotlights Chip Stacks

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TALK TO US

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Small Accelerator, Big Promise

Today's particle accelerators can be miles long, and even those used for cancer treatment can weigh as much as 50 tons. Now a team at Brookhaven National Lab has successfully built and tested a lightweight, tabletop-sized accelerator prototype that uses 3-D-printed beam frames to hold blocks of low-cost, fixed magnets

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Hot Chips Spotlights Chip Stacks

CUPERTINO, Calif. – A U.S. research effort aims to nurture an ecosystem for designing semiconductors from plug-and-play chiplets. It arrives at a time when rivals such as Intel and Xilinx are using proprietary packaging techniques to differentiate competing FPGAs.

Over the next eight months, the Common Heterogeneous Integration and IP Reuse Strategies (CHIPS) program under the Defense Advanced Research Projects Agency aims to define and test open chip interfaces. Within three years it hopes multiple companies will use the links to connect a wide range of die to form sophisticated components.

Magnetoelectric RAM Slashes Energy

LAKE WALES, Fla. — A team of Russian and French researchers bonded a piezoelectric material to magneto-elastic magnetoelastic layers of a terbium-cobalt alloy (TbCo2) and an alloy of iron and cobalt (FeCo) to create a nonvolatile memory architecture that could decrease the required read/write energy of traditional memories by a factor of 10,000 or more.

The key to achieving the ultralow-power magnetoelectric RAM (MELRAM), according to the researchers, was to abandon giant magnetoresistive stacks and magnetic tunnel junctions. The demonstration architecture instead relies on magnetoelectric interactions for readout of the information coded in the magnetic subsystem when an electric field is applied, accomplished via a composite multiferroic heterostructure using piezoelectrically stress-mediated magnetoelectronics.

Startup Unveils Graph Processor at Hot Chips

ThinCI, a five-year-old startup in California, presented Monday at the Hot Chips symposium the company's "Graph Streaming Processor (GSP)." ThinCI (pronounced "Think-Eye"), a chip developer for machine learning and computer vision, is poised to roll out its GSP and Graph Computing compiler.

The company, which says that it's in the midst of taping out with its first silicon, plans to ship PCIe-based development boards in the fourth quarter this year.

At the symposium, ThinCI pitched the company's GSP as "a next-generation computing architecture."

Inevitably, though, the startup will have to counter industry skeptics asking if ThinCI's GSP can really accelerate graph computing.

Flash Memory Shortage Hits Smartphone Supply

SAN FRANCISCO — Global smartphone sales posted an annual increase in the second quarter, but a limited supply of components such as flash memory are expected to impact the smartphone supply in the second half of the year, according to market research Gartner Inc.

Anshul Gupta, research director at Gartner, said rising costs and reduced availability for NAND flash and OLED displays will affect premium smartphone sales in the remainder of the year.

"We've already seen Huawei's P10 suffer from a flash memory shortage, and smaller, traditional brands, such as HTC, LG and Sony, are stuck between aggressive Chinese brands and the dominating market shares of Samsung and Apple in the premium smartphone segment," Gupta said.

Small Accelerator, Big Promise

LAKE WALES, Fla. — Today's particle accelerators can be miles long, and even those used for cancer treatment can weigh as much as 50 tons. Now a team at Brookhaven National Lab has successfully built and tested a lightweight, tabletop-sized accelerator prototype that uses 3-D-printed beam frames to hold blocks of low-cost, fixed magnets. Novel software fine-tunes the magnetic field so that multiple beams can be channeled through a single beam pipe.

Brookhaven researchers proved the concept by directing five beams, with energies ranging from 18 million electron volts to 70-MeV, around the arced prototype (see illustration). The beams traveled distinct paths through the 2-inch-diameter beam pipe and emerged from the accelerator separated and ready for application in physics research and medicine. Brookhaven senior physicist Dejan Trbojevic, who holds several patents on designs for particle therapy gantries used to treat cancer, said the new accelerator could reduce the weight of such gantries from 50 tons to just 1 ton.