



### **Many-Body Physics Based Devices for Beyond CMOS (?)**

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Many beyond CMOS Devices that have been proposed. Perhaps not coincidentally, many of these are based on many-body physics concepts. In this talk, we will consider a few such devices that we have been working on. One class is based on exciton condensates formed between 2D material layers, at elevated temperatures and perhaps room temperature. Another beyond CMOS device concept for memory and perhaps logic is based on Ruderman–Kittel–Kasuya–Yosida (RKKY) interactions between nano-magnets on 2D materials. The essential operating physics and operating principles of these devices will be presented. However, the challenges considered extend beyond just realizing such devices. We also consider circuit needs and the challenges faced by fitting such “round peg” devices in to a “square hole” CMOS world.

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