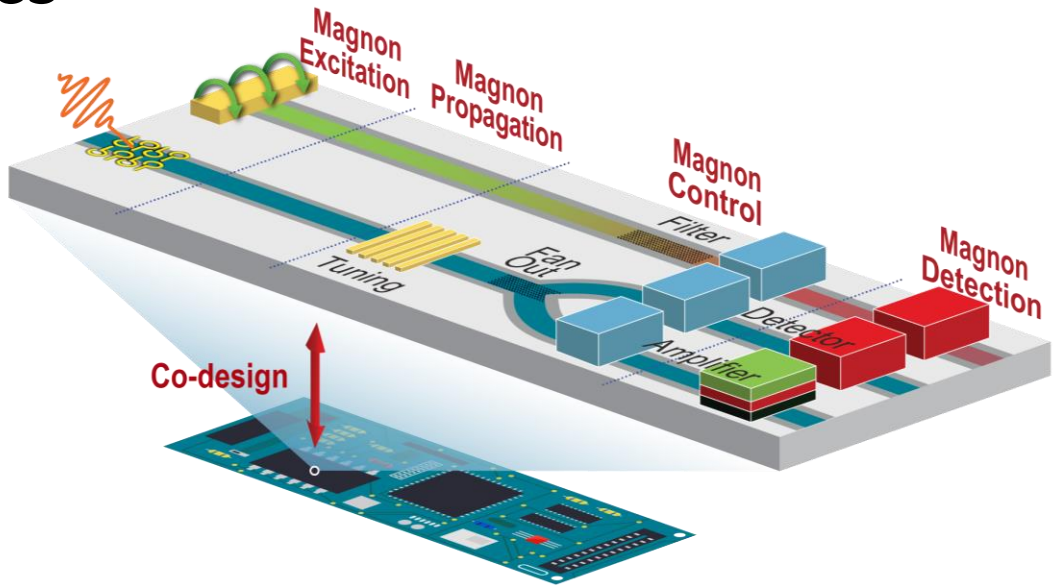
Center for Energy Efficient Magnonics

Yuri Suzuki (SLAC); Class: 2024-2028



MISSION: To advance the basic scientific understanding of magnon excitation, propagation, transduction, and control that is motivated by an end use of magnon-based interconnects and their integration into microelectronics.

RESEARCH PLAN: Magnons provide the promise for microelectronics with low-loss information and energy transfer at the nanoscale using propagating excitations with wavelengths that are orders of magnitude smaller than microwave or photonic interconnects. We will (i) manufacture resilient ferrimagnetic and antiferromagnetic materials with record low damping, (ii) demonstrate robust tunability of these materials to functionalize magnon interconnects, (iii) enhance magnon transmission among and within these materials and at interfaces, (iv) generate and detect coherent and incoherent magnons efficiently from GHz to THz frequencies, (v) develop a framework for nonlinear magnon behavior.

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