Magnon Confinement in oxide heterostructures

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A few years ago, an intriguing new spin based logic-in-memory architecture, MESO, was described which used magnetoelectric multiferroics (ME) and spin-orbit (SO) metallic oxides as key building blocks. Over the past year, there have been some new developments in SOT based manipulation of magnets. Particularly, the role of epitaxy and atomically perfect interfaces with spin and/or orbital current enhanced oxides has been shown to significantly impact the spin-to-charge conversion (or vice versa). We are studying spin transport in La-BFO using a combination of NV imaging and spin Hall measurements. Over the past year, we have discovered the powerful role of magnon confinement as a pathway to enhance spin transport (and thus the spin-to-charge conversion efficiency) by 100X. This talk will give you a summary of our progress so far.