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Resonant Inelastic X-ray Scattering (RIXS) to Probe Spin Dynamics in Magnonic Materials[1]

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h $-abstract-$\pardSpin excitations in quantum materials provide a revolutionary alternative for devices with improved performances and energy-efficiency, as they permit the transfer of information without any movement of charge, thus eliminating the dominant source of energy dissipation. Understanding how to manipulate such spin excitations would provide a foundation for the next generation of energy-efficient electronic devices. \In this talk, I will present recent results achieved by Resonant Inelastic X-ray Scattering on spin excitations in magnetic thin films of decreasing thickness [1]. Our study demonstrates that confinement is responsible for decreasing the spin excitation energy and increasing their lifetime: we thus propose that the film thickness can be used as a knob to tune the effective refractive for spin excitations in magnetic media used in future magnonic devices.\pard1] J. Pelliciari,S. Lee,K. Gilmore,J. Li,Y. Gu,A. Barbour,I. Jarrige,C. H. Ahn,F. J. Walker,V. Bisogni; arXiv: 2010.08745, Accepted in Nature Materials.\pard-/abstract-\

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