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(G*) POS-G66 – Dynamical Backaction Magnomechanics

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Dynamical backaction resulting from radiation pressure forces in optomechanical systems has proven to be a versatile tool for manipulating mechanical vibrations. Notably, dynamical backaction has resulted in the cooling of a mechanical resonator to its ground-state, driving phonon lasing, and observing the optical-spring effect. In certain magnetic materials, mechanical vibrations can interact with magnetic excitations (magnons) via the magnetostrictive interaction, resulting in an analogous magnon-induced dynamical backaction. This talk will discuss the direct observation of magnon-induced dynamical backaction and its effect on a spherical magnetic sample's mechanical vibrations. Moreover, dynamical backaction effects play a crucial role in many recent theoretical proposals; thus, our work provides the foundation for future experimental work perusing many of these novel theoretical proposals. foundation for future experimental work perusing many of these novel theoretical proposals.

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