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Simultaneously generated spin waves in the magnetostatic backward volume wave and magnetostatic surface wave configuration in a cross-like structure[1] JASON LIU, GRANT RILEY, Colorado State University, FERRAN MACIA, Universitat de Barcelona, ANDREW KENT, New York University, KRISTEN BUCHANAN, Colorado State University — Spin waves, or magnons, in laterally confined microstrips have attracted a great deal of attention recently due to their potential for magnonic logic applications. Previous experimental work on spin wave propagation in metallic magnetic nanowires has focused on the magnetostatic surface wave (MSSW) configuration where the static magnetic field is applied in-plane, perpendicular to the nanowire, because they can be excited relatively easily by an antenna. Spin wave propagation in the less studied magnetostatic backward volume wave (MSBVW) configuration where the magnetization direction is along the nanowire is, however, also of interest because spin waves can propagate without the need for an external field in this geometry. In this work, micro-Brillouin light scattering (micro-BLS) was used to investigate the generation of propagating spin waves in a cross-like Permalloy structure that allows for simultaneous excitation of MSSW in one of the wires and MSBVW in the other. Micro-BLS measurements were conducted as a function of applied field and pumping frequency to probe the efficiency of the generation of the two types of spin waves. Two dimensional spatial profiles were obtained to explore possible interference of the two types of spin waves at the center of the cross-like structure.

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