Spin waves (magnons) play a key role in many spintronics phenomena. For instance, they are responsible for the spin current flow in magnetic insulators and they can interact with other elementary excitations, such as phonons, photons, electrons, polarons, etc. In particular, magnons can strongly interact with phonons in materials with magnetostrictive interaction, creating hybrid magnon-phonon excitations (magnetoelastic waves). The interconversion between magnons and phonons was extensively investigated in the past in bulk samples of the ferrimagnetic insulator yttrium iron garnet (YIG) with the shape of rods and disks that have internal nonuniform magnetic fields. At that time, the research was mainly driven by applications in delay line technology. In this talk, we present an investigation of the conversion of magnons, generated by microwave fields, into phonons in a YIG film in the presence of a non-uniform magnetic field. We will present results obtained by means of two different experiments. First, we used pulsed microwave signals to launch spin-wave packets at one end of the YIG strip and use time resolved measurements to observe the delayed pulse at the other end of the film. Second, we used wavevector resolved Brillouin light scattering (BLS) to measure the field dependence of the signal generated by continuous (CW) microwave driving, at various positions of the YIG film under a nonuniform field. Comparison of the measured time-delay vs field and wavevector vs field dependencies with calculations using the magnetoelastic wave dispersion shows that the magnon-phonon conversion occurs with constant energy and varying linear momentum. While it is well established that photons in circularly polarized light carry a spin, the spin of phonons has had little attention in the literature. With the BLS experiments we show that the light scattered by the phonons generated in the magnon-phonon conversion process is circularly polarized, thus demonstrating that the phonons carry angular moment [1]. [1] J. Holanda, D. S. Maior, A. Azevedo, and S. M. Rezende, Nat. Phys. 14, 500–506 (2018).