The influence of magnetism on the stochastic excitation of acoustic modes in solar-type stars

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Amplitudes of p-modes in solar-like stars are intrinsically linked to the properties of turbulent convection, which acts as an excitation source. In this framework, stellar rotation and magnetic field strongly influence convection. Recent observational works using results of the *Kepler* mission, showed that p-modes signals are not detected in a large fraction of solar-type stars, where they are expected. One hypothesis is that the excitation source term is too low to sustain oscillations. In addition, observations of solar-type stars show that the amplitude of these waves are modulated along their magnetic activity cycles.

To asses the impact of magnetic field, we extend the state-of-the-art of the formalism describing stochastic excitation. We show that the turbulent source terms are modified by the presence of rotation and magnetism. First, magnetism influences Reynolds stresses and the entropy source terms. Second, new magnetic source terms appear. Next, we illustrate how the acoustic waves amplitudes are modulated by the magnetic activity of stars. This work helps predict p-modes detectability in rotating magnetic solar-like stars, which is paramount to prepare the forthcoming space missions in asteroseismology, such as *PLATO* and *HAYDN*.