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Sound in a linear array of magnetic spheres

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We study the propagation of sound in a chain of strongly magnetized spheres. The strong dipole-dipole magnetic force allows us to hold the chain in different positions to evaluate the effect gravity produces on sound transmission. This strong cohesion permits us also to insert in the chain a periodical array of impurities and study the effect this array has in the transmission. A well defined gap of frequencies, where no sound propagation exists, is observed. We investigate as well square lattices, and look into the effects dipole anisotropy causes to sound propagation. Finally, we study the effects produced by vacancies.