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Gravitational waves from a first-order phase transition: sound waves and turbulence

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I will review the production of GWs by the anisotropic stresses of velocity and magnetic fields induced in a first-order phase transition. I will present analytical estimates and numerical simulations that address the production of gravitational waves by sound waves and by MHD turbulence, and show how such an observation by LISA could allow us to understand the nature of the electroweak phase transition and in addition can be used to put constraints on primordial magnetic fields that could persist as intergalactic magnetic fields in the cosmic voids of the large scale structure of the Universe at present time.

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