Particle Physics Challenges



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Gravitational waves produced by compressible MHD turbulence from cosmological phase transitions

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We discuss the gravitational wave spectrum produced by magneto-hydrodynamic turbulence in a first order phase transitions.

In particular, we discuss the impact of the rate of turbulent decorrelation on the spectrum of gravitational waves and how this can impact future constraints on cosmological first order phase transitions.

Additionally, we discuss how "sound-wave" driven turbulence can transform into vortically driven turbulence in the presence of magnetic fields, some initial vorticity or due to a non-barotropic flow.

This leads to important changes of an initially sound-wave driven gravitational wave spectrum at later times in the evolution affecting both the amplitude and the shape of the spectrum.

Primary author: NIKSA, Peter (Uni HH II. Institut für Theoretische Physik)

Co-authors: Prof. SIGL, Guenter (University of Hamburg); Mr SCHLEDERER, Martin (Universität Hamburg)

Presenter: NIKSA, Peter (Uni HH II. Institut für Theoretische Physik)

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