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Gravitational wave induced baryon acoustic oscillations

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Particle models beyond the Standard Model are often accompanied by the spontaneous breaking of a new symmetry and thus by a phase transition. Arguably, the most interesting among them are first order phase transitions, in which bubbles of the low-temperature phase form and collide, leading to the generation of gravitational waves (GWs). These might be measurable as stochastic GW background today and thus constitute a potential probe of new physics.

Consequently, analyzing models for their potential GW signal has gained much interest with the first measurements of GWs from astrophysical sources.

However, one has to ensure that these events do not interfere with other cosmological processes. In this talk we discuss the impact that GWs originating from a post BBN first order phase transition can have on structure formation.

We will show in which way the GW density affects the primordial density perturbations and derive a modified linear matter power spectrum that allows us to set limits on the strength and duration of such a late first order phase transition.

Authors: Prof. SCHÄFER, Björn Malte (Zentrum für Astronomie der Universität Heidelberg, Astronomisches Rechen-Institut,); DÖRING, Christian; Prof. LINDNER, Manfred (Max-Planck-Institut für Kernphysik); Prof. BARTELMANN, Matthias (Institut für Theoretische Physik, Heidelberg University,); Dr CENTELLES, Salvador

Presenter: DÖRING, Christian

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