Contribution ID: **43** Type: **not specified**

Non-singular solutions to the Boltzmann equation with a fluid Ansatz

Wednesday 24 September 2025 16:48 (18 minutes)

Cosmological phase transitions can give rise to intriguing phenomena, such as baryogenesis or a stochastic gravitational wave background, due to nucleation and percolation of vacuum bubbles in the primordial plasma. A key parameter for predicting these relics is the bubble wall velocity, whose computation relies onsolving the Boltzmann equations of the various speciesalong the bubble profile. Recently it has been shown that an unphysical singularity emerges if one assumes these local quantities to be described as small fluctuations on a constant equilibrium background. I'll show that a way to solve this issue is by including the spatial dependence of the background into the Boltzmann equations for the particles distribution functions. We apply this formalism to the Standard Model with a low cutoff and find that stable deflagration solutions are found for almost all the values of the cutoff considered, while detonations are restricted to some corner of the parameter space.

Primary authors: Mr A. PINTO, Daniel (Universidade Federal de Minas Gerais); PERBONI, Enrico (T (Cosmology)); Prof. C. DORSCH, Glauber (Universidade Federal de Minas Gerais); KONSTANDIN, Thomas (T (Cosmology))

Presenter: PERBONI, Enrico (T (Cosmology))

Session Classification: Parallel Sessions Wednesday Cosmo

Track Classification: Cosmology & Astroparticle Physics