

First order phase transitions in the early universe and quantizing particles across the wall

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We know very little about the first few seconds of the universe, beyond the very successful Big Bang nucleosynthesis. In those first instants, First Order phase transitions in the early plasma could have taken place and reshape the content of the plasma and spacetime. For the computation of baryogenesis, gravitational waves, dark matter production or even possibly PBH production, the asymptotic velocity of the bubble wall is a crucial parameter. In this talk we will see how a proper quantization of particles changing mass across the bubble wall can help to take into account the pressure on the bubble wall from transverse and from longitudinal modes.

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