Abstract

Relic density calculations are often used to constrain particle physics models, and in particular supersymmetry. In this seminar, I will show that the presence of additional energy or entropy before the Big-Bang nucleosynthesis can however completely change the relic density constraints on the SUSY parameter space. Therefore one should be extremely careful when using the relic density to constrain supersymmetry as it could give misleading results when combined with LHC data. With another point of view, I will also show that combining the discoveries of the LHC with relic density calculations can bring light on the inaccessible pre-BBN Dark Time physics. Finally, I will present briefly SuperIso Relic, a new relic density calculator in supersymmetry, which incorporates alternative cosmological models, and is publicly available.