

Generating the Baryon Asymmetry of the Universe via Dark Matter Annihilations

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We have evidence that most of the matter content of the universe is in a non-luminous form called Dark Matter (DM). The remaining, less abundant, visible matter is well understood at the fundamental level in the theoretical framework of the Standard Model (SM). However the fact that in the latter sector we observe an excess of matter over anti-matter, the Baryon Asymmetry of the Universe (BAU), cannot be explained within the SM. It is clear that both DM and BAU require physics Beyond the SM and there are many ideas as to what the DM candidate could be and what mechanism could be responsible for the BAU. In principle the DM and the BAU problems could be unrelated. Indeed they have often been approached separately in the literature. Nevertheless one could entertain the idea that they have a common solution that can be found within the same model. This connection is motivated by the fact that the ratio of the abundances of dark and baryonic matter is a number not far from one, which would suggest a common mechanism for the origin of the two species.

In this talk we will review the DM and BAU problems, and discuss some possible scenarios where the BAU can be generated via DM annihilations.