



Contribution ID: 19

Type: not specified

Dark Matter as the quark nuggets in a colour superconducting phase

Thursday 1 September 2016 18:30 (30 minutes)

I advocate a proposal that two of the largest open questions in cosmology, the origin of the matter/antimatter asymmetry and the nature of the dark matter (DM), may have their origin within a single theoretical framework. Furthermore, both effects may originate at the same cosmological epoch from one and the same QCD physics when the θ parameter was not zero. This source of the strong CP violation is not available at present time. I advocate a model in which “baryogenesis” is actually a charge separation process at non-vanishing θ in which the global baryon number of the universe remains zero. In this model the unobserved antibaryons come to comprise the dark matter. I review the observational support for the model (reviewed in 1305.6318 with large number of refs on the original results) and present some new computations supporting the mechanism for the charge separation effect at non-vanishing θ (ongoing work).

Summary

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Session Classification: Section F

Track Classification: Section F: Nuclear and Astroparticle Physics