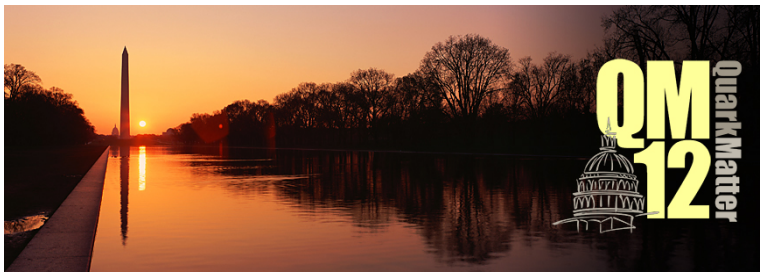

Contribution ID: **548** Type: **Poster**

Strange Quark Nuggets as Baryonic Dark matter from the Relics of Cosmic QCD Phase transition

Thursday, August 16, 2012 4:00 PM (2 hours)

The universe is assumed to begin with a large baryonic chemical potential acquired through an Affleck –Dine mechanism, which leads on to a baryon asymmetry of 0(1) without requiring superhigh temperatures. However, the observed baryon asymmetry of 0(10-10) at CMB temperature needs to emerge naturally from such a scenario. This is what could be achieved through a "little inflation"of about 7 e –folding leading to a QCD first order transition [1], while remaining in a deconfined and in a chirally symmetric phase. It was demonstrated [2] using chromoelectric flux-tube fission model that some strange quark "nuggets"(SQN) [3] with an initial baryon number ˜ 1044 or more can survive the evaporation process and be stable on cosmological time scales. We demonstrate that these SQN's are natural candidates for baryonic dark matter. We also argue that these SQNs, together with the natural requirement that the total baryon number of the universe is an integer [4], can explain the occurrence of the cosmological dark energy within the standard model of particle physics.

[1] T. Boeckel and J. Schaffner –Bielich, Phys. Rev. Lett. 105, 041301 (2010)
[2] P. Bhattacharjee et. al. Phys. Rev. D 48 , 4630 (1993)
[3] E. Witten, Phys. Rev. D 30 272 (1984)
[4] S. Banerjee et al. Phys. Lett. B611, 27 (2005)

Primary author: SINHA, Bikash

Presenter: SINHA, Bikash

Session Classification: Poster Session Reception

Track Classification: New theoretical developments