



High Energy Physics - Phenomenology

A dark force for baryons

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(Submitted on 13 Jul 2011)

We suggest the existence of a fundamental connection between baryonic and dark matter. This is motivated by both the stability of these two types of matter as well as the observed similarity of their present-day densities. A unified genesis of baryonic and dark matter is natural in models in which the baryon number is promoted to a spontaneously broken local gauge symmetry. This is illustrated in a specific class of SUSY models using the Affleck-Dine mechanism. The dark matter candidate in these scenarios is charged under the baryon gauge symmetry and must have a mass around the GeV scale to give the correct present-day abundance. We discuss constraints from B-factories, LEP, mono-jet searches at the Tevatron, and dark matter direct detection experiments. A baryonic dark force is shown to be consistent with all data for mediators as light as the GeV scale.

Comments: 24 pages + appendices + references, 7 figures
Subjects: **High Energy Physics - Phenomenology (hep-ph)**;
Cosmology and Extragalactic Astrophysics (astro-ph.CO);
High Energy Physics - Theory (hep-th)
Report number: LA-UR-11-10573
Cite as: **arXiv:1107.2666 [hep-ph]**
(or **arXiv:1107.2666v1 [hep-ph]** for this version)

Submission history

From: Ian Shoemaker [view email]
[v1] Wed, 13 Jul 2011 20:25:48 GMT (822kb,D)

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