

Antihelium albedo induced by the magnetic fields in the spiral galaxies

A. Codino¹ and F. Plouin²

¹Dipartimento di Fisica dell'Università di Perugia and INFN, Via A. Pascoli, 06100 Perugia, Italy

²LPNHE, Ecole Polytechnique, F-91128 Palaiseau, France

Abstract. The existence of cosmic rays in the intergalactic space is demonstrated by a comparison of the short containment times of galactic cosmic rays with the age of the oldest stars, about 10^7 years against 18×10^7 years. This implies, for a typical spiral galaxy, an average number of 1800 injection cycles of cosmic rays into the intergalactic space. From the presence of an extragalactic cosmic ray ux surrounding the haloes of galaxies, regardless of its intensity, follows that a significant fraction of the extragalactic ux is either absorbed

or reflected by the magnetic fields and eventually amplified by interstellar interactions. Recent measurements of the magnetic fields of more than 15 spiral galaxies are available. A calculation of the fraction of extragalactic ux of antihelium and proton populations suffering absorption, reflection or amplification in spiral galaxies is presented. Relevance of these results on the antihelium search is discussed.

Correspondence to: A. Codino (Antonio.Codino@pg.infn.it)