



Measurement of Cosmic Ray antiproton/proton flux ratio at TeV energies with ARGO-YBJ

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Cosmic ray antiprotons provide an important probe for the study of cosmic-ray propagation in the interstellar space and to investigate the existence of Galactic dark matter. The ARGO-YBJ experiment, located at the Yangbajing Cosmic Ray Laboratory (Tibet, P.R. China, 4300 m a.s.l., 606 g/cm²), is the only experiment exploiting the full coverage approach at very high altitude presently at work. The ARGO-YBJ experiment is particularly effective in measuring the cosmic ray antimatter content via the observation of the cosmic rays Moon shadowing effect. Based on all the data recorded during the period from July 2006 through November 2009 and a full Monte Carlo simulation, we searched for the existence of the shadow produced by antiprotons at the few-TeV energy region. No evidence of the existence of antiprotons was found in this energy region. Upper limits to the antip/p flux ratio are set to 5 % at a median energy of 2 TeV and 6 % at 5 TeV with a confidence level of 90 %. In the few-TeV energy range this result is the lowest available.

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