



ID de Contribution: 11

Type: **Contribué**

## Flat rotation curves, MOND-like behavior, and CMB spectrum in the Dirac-Milne universe

The Dirac-Milne (D-M) universe, a symmetric matter-antimatter universe, i.e. with equal quantities of matter and antimatter, but where antimatter behaves as a negative mass component repulsing both matter and itself (see G. Manfredi et al., Phys. Rev. D 98, 023514 (2018) for a precise definition) presents several concordance properties with our universe (age, luminosity distance, nucleosynthesis, LSS). Here, using 1D and 3D simulations of structure formation in the D-M universe, we show that the antimatter component mimics the presence of nearly spherical Dark Matter halos around every massive structure, induces flat rotation curves, and creates a MOND-like behavior, effectively providing an explanation for MOND.

We present a preliminary study of the CMB spectrum in D-M, evidencing strong additional elements of concordance between our universe and the D-M universe.

**Auteur principal:** CHARDIN, Gabriel (CSNSM Orsay)

**Co-auteurs:** Dr DUBOIS, Yohan (CNRS); Dr MANFREDI, Giovanni (CNRS); Dr MILLER, Bruce (Texas Christian University); Dr STAHL, Clément (APC)

**Orateur:** CHARDIN, Gabriel (CSNSM Orsay)