

Jeudi 25 avril 2024 à 11h (IAS, bâtiment 121, salle 1-2-3)

What does meteorite paleomagnetism tell us about magnetic fields in the solar nebula?

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One outstanding challenge in planetary sciences is to understand how planetary bodies form out of dust in protoplanetary disks. One of the pre-requisite to planetary accretion is the radial motion of solids in the disks. However, the mechanisms responsible for the necessary loss of angular momentum remain elusive. The presence of magnetic fields is increasingly regarded as an efficient way of transporting angular momentum, particularly through the launch of magnetized winds. However, models that include magnetic effects are largely unconstrained. At present, astronomical observations of extrasolar disk magnetic fields remain rather limited, mainly because current technology cannot probe the field intensities in the regions of interest in the disks. Fortunately, paleomagnetic studies of meteorites give us access to a record of the magnetic field of a protoplanetary disk (our own solar nebula) with temporal and spatial resolution superior to those of astronomical observations. I will give an overview of our current knowledge of the solar nebula field as recorded by meteorites. As a case study, I will present the results of our recent paleomagnetic investigation of the Erg Chech 002 meteorite, which provides us with one of the oldest and best resolved record.