

Abstract

We performed a magneto-hydrodynamical simulation of cosmic structure formation based on a constrained realization of the local universe. The initial conditions are constructed in a way to represent the local density and velocity fields within a sphere of 100 Mpc, reproducing the positions of known galaxy clusters in the Local Universe. This simulation is used to:

- Study magnetic field in galaxy clusters and filaments, and therefore predict for the first time the structure of the extragalactic magnetic field in the local universe.
- Construct for the first time an realistic map of deflections of ultra-high energy cosmic rays by extragalactic magnetic fields.
- Construct full sky x-ray emission maps to study, if close by super clusters regions (like Centaurus ore Pisces-Perseus) will allow to detect the emission of WHIM in these regions, either by diffuse emission or by emission of O^{VII} or O^{VIII} .

