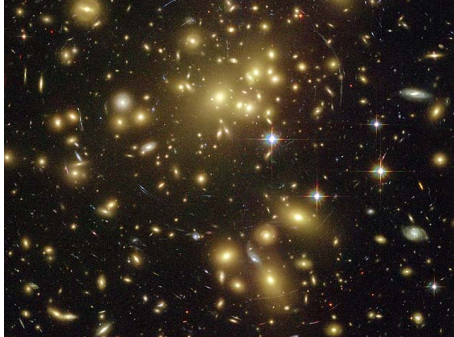


Extragalactics, Cosmology and Relativity

Galaxy clusters : from laboratories for astrophysics to cosmology

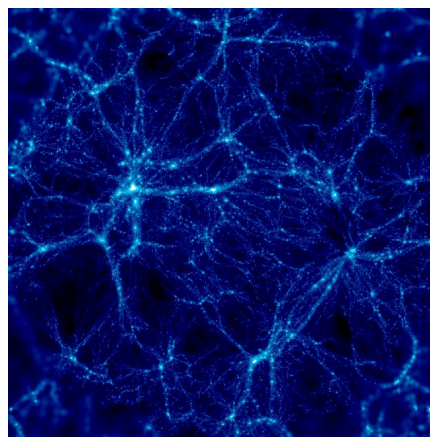


The main goal of this METEOR is to link theories of structure formation and some of the observed physical properties of galaxy clusters. It will be supervised by Christophe Benoist and Sophie Maurogordato.

General context

Clusters are the most massive bound structures in the universe, product of a long history of accretion or merging of smaller units. Their evolution in time is therefore a witness of mass assembly processes in the universe. As they formed relatively recently in the cosmic history they are also good tracers of the recent expansion rate of the universe. Moreover, as they are concomitant with the recent increase of dark energy density, they are also interesting systems to set constraints on this mysterious component. However, for clusters to achieve these promises many steps are necessary, from the hard task of detecting them to the estimate of their mass, going through a better understanding of the complex physics that they host. If our ulti-

mate goal will be to understand how clusters can be used to constrain cosmological models, we will dedicate a large fraction of this METEOR in understanding some of the main physical properties of clusters with emphasis on observational signatures.



Applications

The METEOR will proceed as mini-lectures and articles or books reading that will lead to short informal presentations. In order to get some familiarity with the topic, students will have to manipulate various sets of real data coming from large surveys (e.g. SDSS) and derive themselves some of the properties that will be seen from a more theoretical perspective.

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