



Département d'Astrophysique

Séminaires du DAp

Jeudi 02/02/2012, 11:00

Bat 713, salle de séminaires Galilée , CEA Saclay, Orme des Merisiers

**T.SOUSBIE**

**PERSISTENT STRUCTURES IN THE COSMIC WEB : A  
TOPOLOGICAL VIEW ON FILAMENTS, WALLS AND VOIDS**

During this seminar, I will present a novel numerical method for the coherent multi-scale identification of structures in simulated as well as observational and possibly noisy data sets. The method is based on recent advances in applied mathematics, namely the theory of persistence and discrete Morse theory. In this talk, I will first focus on introducing the necessary mathematical background in topology and try to present the essence of these theories in a relatively simple way.

I will then show how this can be applied to a concrete cosmological problem : the identification and modelisation of filamentary structures in the cosmic web, as measured in dark matter simulations as well as large scale galaxy surveys (e.g. the SDSS catalog) and will present a few other astrophysical applications.

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