



**Séminaire organisé par**

**AIM & Le service d'Astrophysique  
CEA/DSM/Irfu**



**INTERPRETING THE TENSION BETWEEN THE CMB AND LARGE-SCALE STRUCTURE  
WITH HYDRODYNAMICAL SIMULATIONS**

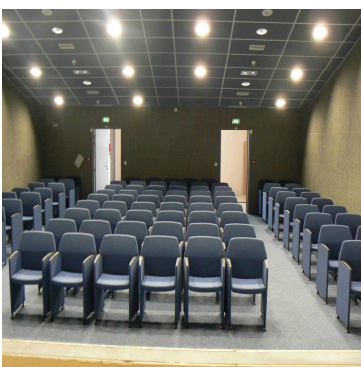
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The Planck mission has recently delivered on its promise to obtain ~few percent level constraints on the fundamental parameters of the standard model of cosmology, the LambdaCDM model. In spite of commonly-made claims that "all is well", detailed comparisons to other datasets are beginning to reveal some interesting tensions. Measurements of local large-scale structure (LSS) in particular appear at odds with the CMB results. A few recent studies have proposed massive neutrinos as a way to reconcile the CMB and LSS measurements. However, before arriving at such a strong conclusion (or adopting any other modification of the standard model) we must be certain that we have properly dealt with all important sources of systematic error. Precisely modelling large-scale structure is challenging in particular, due to the non-negligible effects of feedback processes associated with galaxy formation. Here I present the first results from a new large hydrodynamical simulation campaign (BAHAMAS - BARYONS and HALOES of MASSIVE SYSTEMS) designed specifically for LSS cosmology purposes and that realistically captures the effects of feedback on LSS. A number of the simulations include a massive neutrino component. Using virtual observations of the simulations, I re-assess the evidence for tensions between the CMB and various LSS probes, including cosmic shear, CMB lensing, galaxy clustering, the Sunyaev-Zel'dovich effect and so on. I then show the effects of massive neutrinos on these various LSS tests and discuss the current evidence for and against their cosmological importance.

**mardi 4 octobre 2016**

**10h00 Salle Galilée bât 713 - Orme des Merisiers**



**Le petit-déjeuner précèdera le séminaire**

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