



Contribution ID: 220

Type: **Talk**

Neutrinos beyond the linear regime: a new theoretical approach

Tuesday 15 December 2015 18:20 (20 minutes)

There is now no doubt that neutrinos are massive particles fully involved in the nonlinear growth of the large-scale structure of the universe. A problem is that their nonlinear behavior is particularly difficult to describe by theoretical models. In my talk, I will present a new method allowing to deal with massive neutrinos beyond the linear regime. The key idea is to describe neutrinos as a collection of flows instead of considering them as a single multi-flow fluid. In this framework, no velocity dispersion has to be taken into account and the time evolution of neutrinos can be encoded in fluid equations similar to the ones describing cold dark matter. Hopefully, this approach is a further step towards a computation of the nonlinear matter power spectrum in the presence of massive neutrinos.

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Session Classification: 09 - Cosmic neutrinos