

Identification of basins of attraction in the local Universe & more

Tuesday 4 February 2025 09:00 (30 minutes)

Scarce, anisotropic, extremely noisy and prone to various biases: peculiar velocity surveys are not trivial to interpret. In this talk, I'll present HAMLET, a powerful GPU-oriented code that implements a field-level forward modeling method, which enables the reconstruction of the matter distribution in the Local Universe and the large scale motion associated to it. An application to the 38,000 (groups of) galaxies of the Cosmicflows-4 catalog will be discussed, notably the mapping of Basins of Attractions with a full probabilistic approach, as well as the constraining of $f\sigma_8$ from ZTF-like SNIe data. Finally, the non-linear improvements to the method and the use of HAMLET for the constraining of initial conditions for cosmological simulations will be presented.

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