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Galaxy evolution, observational biases and cosmological tensions

Tuesday 12 September 2023 10:00 (1 hour)

Galaxies are known to be good but biased tracers of the underlying dark matter field. This bias is mostly driven by the history of hierarchical clustering and galaxy/halo assembly history but is also affected by factors regulating galaxy evolution, usually environment dependent. Moreover, it is easily blurred by observational biases unavoidably present in the data. Thus, the relations between galaxy physical properties and the underlying dark cosmic web are not easy to model. At the same time, all cosmological tests are necessarily based on baryonic tracers. Thus, using galaxies for tests of cosmological models relies on our understanding of the relations between a galaxy, its DM halo, large-scale environment, their co-evolution, and observational biases in the data we use. In my talk, I will show some recent results from our group illustrating nontrivial dependencies between galaxy evolution and their environment, and pointing to the prospects - and pitfalls - with the new soon-arriving data from near-future large surveys.

Presenter: Prof. POLLO, Agnieszka (National Centre for Nuclear Research & Jagiellonian University)