

Probing dark matter microphysics with structure formation

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The microphysics of dark matter remains a mystery, with current data only setting upper bounds on interaction cross sections, or lower bounds on the mass in the case of a thermal relic. Going to higher redshift and smaller scales will let us improve these bounds, but more importantly, may allow us to distinguish between models with otherwise similar signals. In particular, I will present a novel method for constraining models with suppressed small scale structure using gravitational waves, along with forecasts for complementary constraints from 21cm intensity mapping. The latter is especially important regarding what is necessary to distinguish interacting dark matter from warm dark matter.

Author: MOSBECH, Markus (RWTH Aachen)

Presenter: MOSBECH, Markus (RWTH Aachen)

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