

Warsaw Workshop on Non-Standard Dark Matter: multicomponent scenarios and beyond

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From dark particle physics to the matter distribution of the Universe

Content :

The effective theory of structure formation (ETHOS) allows the classification of dark matter theories according to their structure formation properties rather than their intrinsic particle properties. This makes ETHOS a particularly useful framework for comparing theoretical predictions of extended dark matter scenarios to actual cosmological and astrophysical observations. Using this effective theory, we describe how the details of the dark matter physics actually affect the shape of the linear matter power spectrum, hence clarifying the link between dark matter microphysics and structure formation. We then use the ETHOS framework to put cosmological and astrophysical constraints on broad classes of dark matter microphysics. We finally discuss how non-minimal dark matter theories can be used to remove apparent tension between various cosmological probes.

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