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Lyman-alpha constraints on non-cold dark matter

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Despite its remarkable success, the standard LCDM paradigm has been challenged lately by significant tensions between different datasets. This has reinvigorated interest in beyond-LCDM models, such as dark matter models with interactions or non-negligible velocities, known collectively as non-cold dark matter. These models result in a suppression of the matter power spectrum on small scales, making them an ideal target to be constrained with Lyman-alpha data. In this talk I will discuss a method to use Lyman-alpha data that does not need the usual computationally-expensive hydrodynamical simulations. I will present recent competitive bounds for warm dark matter, mixed warm+cold models, and dark matter interactions, highlighting the broad range of applicability of this new method.

Author: HOOPER, Deanna

Presenter: HOOPER, Deanna

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