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The synergy between CMB spectral distortions and anisotropies

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Despite their incredible precision, both concluded and upcoming CMB missions (such as Planck, CMB-S4, or LiteBIRD) still face several intrinsic limitations that can only be overcome with the help of complementary probes. One particularly interesting avenue to extract more information from the CMB is given by its spectral distortions (SDs). Since these distortions are created whenever the energy or number density of the CMB photons is modified, they are an ideal candidate to constrain both exotic and non-exotic energy injection scenarios. In this talk, following the novel CLASS implementation of SDs, I will provide a brief pedagogical introduction to the topic of SDs, and discuss their application to a selection of examples including decaying dark matter and primordial black holes. The presented results will show the far-reaching possibilities of combining CMB anisotropies and SDs.

Primary author: LUCCA, MATTEO (IDP - ULB (Universite libre de Bruxelles))

Co-authors: SCHOENEBERG, Nils (RWTH Aachen University); Dr HOOPER, Deanna C. (ULB (Université libre de Bruxelles)); LESGOURGUES, Julien (TTK, RWTH Aachen University); CHLUBA, Jens (University of Cambridge)

Presenter: LUCCA, MATTEO (IDP - ULB (Universite libre de Bruxelles))

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