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## Testing the expansion rate with the cosmological recombination lines

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Current measurements of the CMB anisotropies have given us unprecedented precision surrounding the standard  $\Lambda$ CDM model of cosmology and the parameters that make up this model. The data accrued by collaborations like Planck have even allowed us to test additional models of fundamental physics. These models have grown more recently in the context of diluting the tension between low-redshift and high-redshift measurements of the Hubble constant. With the exquisite data, we required a deeper understanding of recombination physics, particularly focused on the relationship between the electrons and the photons. Consequently, we can now calculate the distortions to the CMB black body from such an interaction. In this talk, I am going to demonstrate how we could measure these distortions in future experiments (e.g., Voyage 2050) and discuss the impact on the recombination radiation when we add exotic physics such as early dark energy or fundamental constant variations.

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