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Understanding the CMB Temperature Spectrum

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The Cosmic Microwave Background (CMB) is an open window to the early Universe. To compute the CMB Spectrum we need to perturb the FLRW metric that describes a homogeneous and isotropic universe at large scales. Furthermore, at early times photons have interacted with electrons by Compton scattering, before traveling through the space-time toward us. This interaction produces a perturbation in the temperature of the photons and this can be described by the Boltzmann equation. Solving these equations we can find the CMB Temperature Power Spectrum, in which their peaks are related to the shape and matter components of our universe. In this work, we will show how we can compute the quantities that describe the current percent of matter density, energy density, and shape of the current universe.

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