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Cosmology with the SZ spectrum: measuring the Universe's temperature with galaxy clusters

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The hot gas in clusters of galaxies creates a distinctive spectral distortion in the cosmic microwave background (CMB) via the Sunyaev-Zel'dovich (SZ) effect. The spectral signature of the SZ can be used to measure the CMB temperature at cluster redshift (T_CMB(z)) and to constrain the monopole of the y-type spectral distortion of the CMB spectrum. In this work, we start showing the measurements of T_CMB(z) for a sample extracted from the Second Catalog of galaxy clusters produced by Planck (PSZ2) and containing 75 clusters selected from the Heritage project of the ESA X-ray satellite XMM-Newton. Then we show the forecasts for future CMB experiments about
the constraints on the monopole of the y-type spectral distortion of the CMB spectrum via the spectrum of the SZE.

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