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Serendipitous discovery of CMB foregrounds

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In this talk I will review the presence of recently reported foregrounds in the cosmic microwave background (CMB) radiation associated with extended regions surrounding nearby galaxies. Using the cross correlation of Planck and WMAP maps and the 2MRS galaxy catalogue it is found that the mean temperature radial profiles around nearby galaxies at $cz \leq 4500 \text{ km s}^{-1}$ show a statistically significant systematic decrease of $\sim 15 \mu\text{K}$ extending up to several degrees. This effect strongly depends on the galaxy morphological type and is significantly stronger for the largest (luminous) late-type galaxies. Our results show that the presence of these statistically relevant foregrounds in the CMB maps should be considered in detailed cosmological studies and current CMB anomalies analysis.

Primary author(s) : GARCIA LAMBAS, Diego (Universidad Nacional de Cordoba)

Presenter(s) : GARCIA LAMBAS, Diego (Universidad Nacional de Cordoba)

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