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Recent Advances in the Studies of Cosmic Microwave Background

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Message from the Guest Editor

The Cosmic Microwave Background is one of the fundamental pillars in our understanding of the universe. This electromagnetic radiation encodes information on the very early processes that occurred at the first stages of the universe, its content and thermal history. The success of ground experiments, balloons, and space missions has settled the cosmological model that describes the origin and evolution of our universe with unprecedented precision. But also it contains information of what happened between its formation and the travel to the observer, all of it affected by the galactic diffuse emission or by extragalactic radiosources. The non-achieved detection of the primordial B-modes has opened an important effort for characterizing the polarization of the CMB. This Special Issue is devoted to current advances in CMB studies, which cover a wide range of the physics of the early universe, and also to the modeling of the diffuse emission of our galaxy that becomes a crucial foreground for detecting or constraining primordial B-modes as well as other effects as reionization, lensing and so on that could mask that primordial signal in polarization.

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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