Department of Theoretical Physics



Nachiketa Chakraborty Max Planck Institute for Nuclear Physics, Heidelberg

Foregrounds in astroparticle physics and cosmology

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Effects of physics beyond the standard model of particle physics and cosmology, are often camouflaged by more conventional astrophysical effects. In this presentation, I will give some examples of this and demonstrate power of novel methods in disentangling different scenarios. For example, the gamma-ray sky has contributions from astronomical sources like AGNs, star forming galaxies, etc. But there are potentially other contributions from sources such as particle dark matter. In the light of this, gamma-rays properties of the guaranteed astronomical sources as spectral slope, photon count statistics and polarisation of X-rays and soft gamma-rays is studied in the hope of achieving the broad goal of understanding the underlying physics of radiative emission of these sources and hopefully disentangling these "foregrounds" from other exotic sources such as particle dark matter.



Subha Majunda

CAP/DTP