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Modelling the cosmic-ray/radio/infrared/gamma-ray correlation at sub-galactic scales for the Milky Way and starforming galaxies

We present our study of the nature of the widely-employed radio/infrared/gamma-ray correlation, and its extension to sub-galactic scales. The broadband non-thermal emissions are modelled for Milky Way-like galaxies using the GALPROP cosmic ray propagation framework. We investigate predicted signals for a collection of viewing orientations and locations. Correlation with thermal emissions due to the interstellar radiation field predicted from the same system shows that the scaling of the radio/infrared/gamma-ray correlation depends on geometry (viewing orientation, location), as well as properties of the cosmic rays and interstellar medium. The various effects are discussed in the paper.

Collaboration(s)

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