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GALPROP Code for Galactic Cosmic Ray Propagation and Associated Photon Emissions

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Recent years are marked with many breakthroughs in astrophysics of cosmic rays (CRs), and more are expected in the nearest future. Their proper interpretation is impossible without a well-developed propagation code. The GALPROP project celebrates its 19th anniversary this year. This project is devoted to the development of a self-consistent model for CR propagation in the
Galaxy and associated diffuse emissions (radio, microwave, X-rays, gamma-rays). The project stimulated independent studies of the interstellar radiation field, distribution of the interstellar gas (H2, H I, H II), synchrotron emission and the Galactic magnetic field, and a new study of the isotopic production cross sections. These studies provide necessary and unique input datasets for the GALPROP model. The code is optimized and parallelized and accessible as a standalone executable or library that can be linked to other codes enabling many other studies, such as Markov Chain Monte Carlo, MultiNest, SuperBayeS, and DarkSUSY. The new version of the code has many updates that improve its accuracy and capabilities. As always, the latest release of the code is available through the WebRun, a service to the scientific community enabling easy
use of the GALPROP code via web browsers.

Collaboration

– not specified –

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