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USINE propagation code and associated tools

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I present the first public release of the USINE code for charged galactic cosmic-ray (GCR) propagation. USINE is a C++ toolbox handling GCR ingredients and several semi-analytic propagation models (1D and 2D). Non-public versions of this code were used in the last 10 years to fit the transport parameters, study radioactive nuclei, antinuclei and possible DM contributions, etc. The complementary of USINE with existing fully numerical models is that: (i) a typical model run is fast, so that the many user interfaces and plots provided in USINE make it a very pedagogical tool to better understand CR propagation; (ii) USINE is interfaced with an MCMC engine that enables fits of CR data in a few hours of laptop CPU; (iii) users who wish to develop their own semi-analytic model benefit from having a lot of tools and ingredients at their disposal; (iv) users who wish to provide new inputs (cross sections, etc.) can quickly see their impact on propagation. USINE, as well as CRDB, and a web interface to get solar modulation values for any time period are all part of a suite of public tools provided to ease GCR studies.

Collaboration

– not specified –

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296

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