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From Observations near the Earth to the Local Interstellar Spectra

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Cosmic ray (CR) propagation from sources to the observer is described mainly as diffusion at high energies, while at low energies there are several other physical processes involved, both in the interstellar space and in the heliosphere. In this work we derive the Local Interstellar Spectra (LIS) of CR species outside the Heliospheric boundary. The proposed LIS are tuned to accommodate both, the low energy CR spectra measured by Voyager 1, and the high energy observations publicly released by BESS, Pamela, AMS-01 and AMS-02. The proton and helium LIS are derived by combining the CR propagation in the Galaxy, as described by GALPROP, with the Solar Modulation computed using HelMod Monte Carlo Tool. The proposed LIS are tuned to reproduce the modulated spectra for both, high and low, levels of solar activity.

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