

Galactic CR/Gamma-Ray Model

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C++

Complete new code during 2000.

Fully 3D + time-dependence

(2D non-time dependent option retained)

Vectorizable code

CR:nuclei, secondaries (network:87 species), electrons, positrons, antiprotons,

γ -rays: π^0 -decay, bremsstrahlung, inverse Compton (inc. anisotropic ISRF)

synchrotron

(treatment of all processes described in series of ApJ papers)

ISRF computation (needs to be worked on)

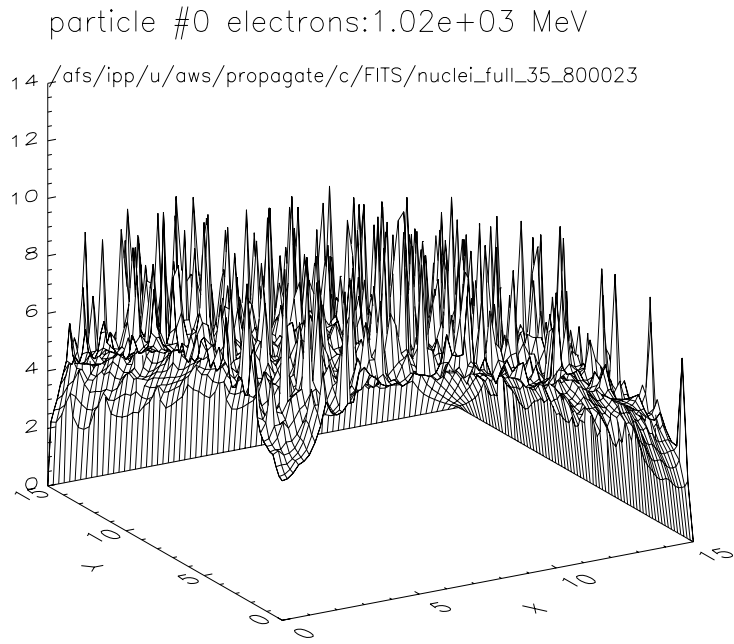
Will be publicly released sometime this year.

Stochastic SNR events in Galaxy with adjustable parameters:

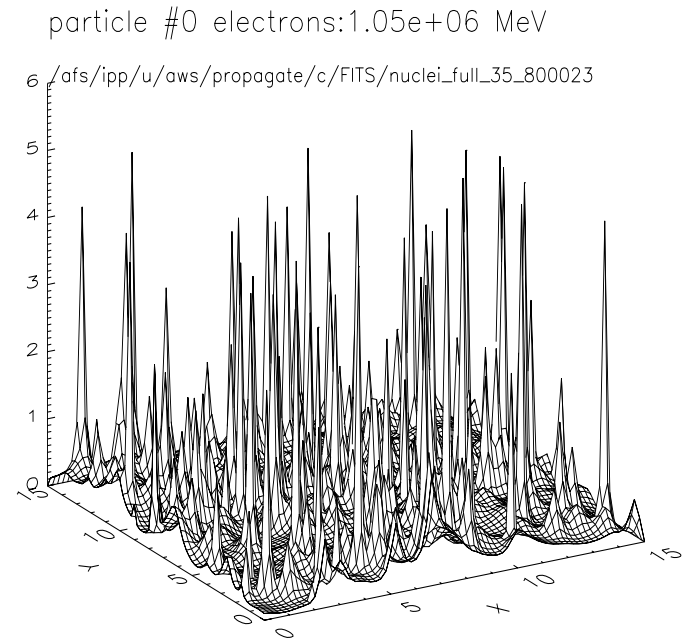
->> inhomogeneous emission

Electrons for stochastic SNR injection

1 GeV

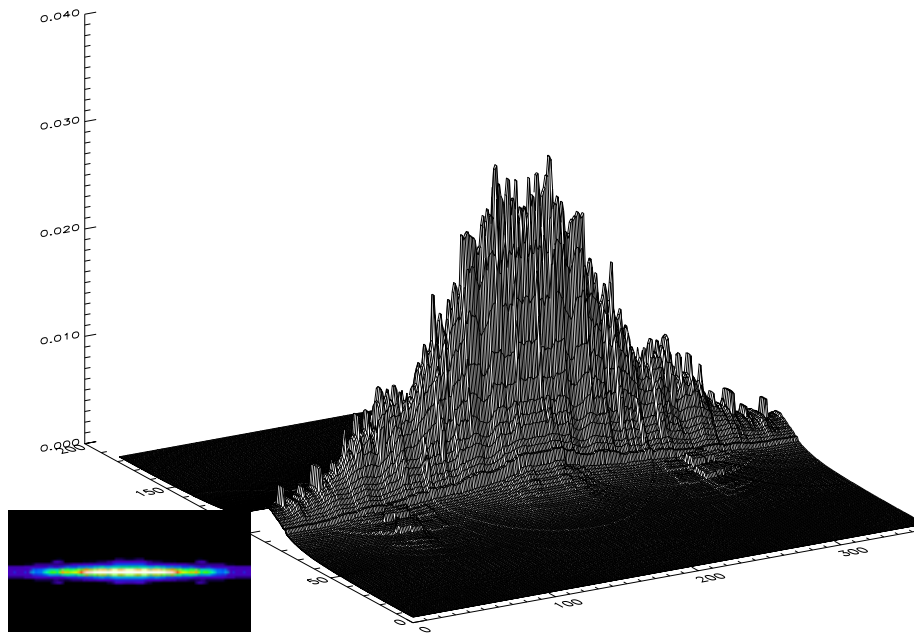


1 TeV

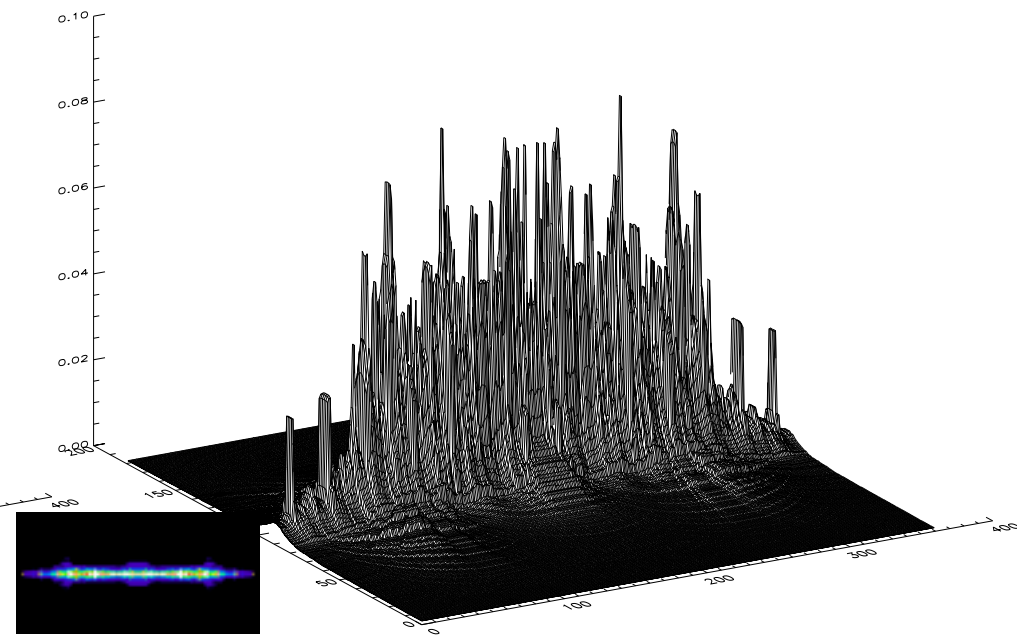


Inverse Compton for stochastic SNR

Inverse Compton $1.02e+03$ MeV



Inverse Compton $5.24e+05$ MeV



These plots illustrate the capabilities of the code to account for the discrete nature of CR SNR sources. At low energies the electron distribution is dominated by long-term storage, with fluctuations due to individual events. At high energies the storage is truncated by energy loss and the fluctuations dominate.

The visible effect on the gamma-ray sky is shown by the inverse Compton maps which become inhomogeneous at high energies.