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## Radio data and synchrotron emission in consistent cosmic ray models

It is well established that even rather simple phenomenological two-zone diffusion models of the galactic halo can reproduce cosmic-ray nuclear data, and the observed antiproton flux, surprisingly well. Here, we consider lepton propagation in such models and compute the expected galactic population of electrons, as well as the diffuse synchrotron emission that results from their interaction with galactic magnetic fields. We find models that are consistent not only with cosmic ray data but also with radio surveys at essentially all frequencies. Requiring such a globally

consistent description of seemingly unrelated galactic phenomena strongly disfavors both very large (L > 15 kpc) and small (L<= 1 kpc) values for the effective size of the diffusive halo. This has important implications for, e.g., indirect dark matter searches.

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