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Evaluating the dark matter contribution to galactic synchrotron radiation

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There is currently a significant effort to observe indirect evidence of dark matter annihilation in our galaxy. One interesting finding was an unexpected synchrotron haze (the "WMAP haze") with a similar intensity and morphology to those predicted by dark matter models. This might also be connected to another recent puzzle in cosmic ray physics: the excess of high energy positrons reported by the Pamela satellite. We create models of the synchrotron component expected from dark matter annihilation and compare these with the observed WMAP excesses. We further analyze the expected Fermi and Pamela signals stemming from these models, and place constraints on the magnetic fields necessary to match these multi-wavelength observations.

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