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Analytical models of X-shape magnetic fields in galactic halos

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Recent radio polarization observations of nearby edge-on spiral galaxies have revealed the presence of X-shape magnetic fields in their halos. Whether the halo of our own Galaxy also hosts an X-shape magnetic field is still an open question, as such a field would be very hard to detect from inside. In this talk, I will discuss the possible physical origin of X-shape magnetic fields as well as their important implications for cosmic-ray propagation and escape. I will also propose a general mathematical description of X-shape magnetic fields, which can be used as input to cosmic-ray propagation models.