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Hot gas heating via magnetic arms in spiral galaxies?

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In some spiral galaxies the so-called “magnetic arms” have been reported, being interarm areas with significant polarized radio emission that suggests high ordering of the magnetic field. The most prominent example of such a galaxy is NGC 6946.
The nature of these magnetic features is still under debate. One of the possible explanations is the action of reconnection heating that could convert the energy of the magnetic field into thermal energy of the surrounding gas.
We summarize the analysis of the radio and X-ray emission (measured with XMM-Newton) from NGC 6946 and conclude that we might see hints for such reconnection heating (cf. Wezgowiec et al. A&A 585, 3, 2016). A similar analysis is on-going for further galaxies: For one of them, M83, we intend to present preliminary results.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

Affiliation

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