# POLARIZED RADIO EMISSION OF EDGE-ON GALAXIES: OBSERVATIONAL RESULTS AND IMPLICATIONS

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We performed a small survey of the total and linearly polarized emission of si edge-on galaxies at $\lambda 2.8$ cm. The selected galaxies show very different levels in the star forming activity, their environment (interacting or not), and many other prop erties. In the following we present the main results of these observations.

**Magnetic field orientation:** No polarized emission could be detected in NG 5907. But the other galaxies in our sample do all show a large-scale magnetic fiel predominantly parallel to the galactic plane, except NGC 4631: this strongly inte acting starburst galaxy shows a vertical magnetic field structure in the central are Thus it is obvious that dominant magnetic fields perpendicular to the disks of spir galaxies are the exceptional rather than the normal case. But it is yet not clea which circumstances lead to such a field configuration. NGC 3628, also a starbur galaxy, shows an ordered magnetic field parallel to the disk.

**Radio spectra:** From a combination of our measured flux densities with alread published values at other frequencies we found spectral indices $\alpha$ ranging from $-0.6$ to $-0.86$, consistent with the values found for normal disk galaxies. Nevertheless th spectra seem to flatten with increasing nuclear star forming activity.

**Galactic halos:** We measured the distribution of the total intensity perpendicula to the galactic disk. Although we detected emission above the disk in all galaxie (except NGC 7331), only two of them show an extended radio halo. While NGC 463 exhibits a galactic wind, NGC 891 is thought to be in a "chimney-mode", where dis material is ejected into the halo through chimneys.

**Depolarization:** The fractional polarization is found to be always lower than th theoretical value of $\sim 74\%$ and to increase with increasing distance from the galact plane. Furthermore the amount and rate of this increase is different in all galaxie Since we can neglect Faraday effects at this wavelength, we modelled the degree polarization, based on beam depolarization. We found that the correlation length the magnetic field increases with galactic height $z$ and increases faster in galaxi with lower star formation efficiency, supporting the idea that strong star formatio leads to the transport of turbulences from the disk into the halo.