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Reconstructing magnetic fields of spiral galaxies from radiopolarimetric observations

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Propositions

accompanying the PhD thesis

Reconstructing Magnetic Fields of Spiral Galaxies from Radiopolarimetric Observations

1. The spatial power spectra of Stokes Q and U parameters and the total polarization intensity P of Galactic synchrotron emission can be used to establish turbulence parameters. (Chapter 2)
2. The variety in the observed values of the power spectra of P , even within the same survey, can still originate from a single power spectrum of the magnetic field. (Chapter 2)
3. Comparing multiwavelength depolarization data directly with the models is an effective approach for constraining magnetic field strengths. (Chapters 3 and 4)
4. Using so called 'X-shape' magnetic fields is the next step in complexity in modeling face-on spiral galaxies. (Chapter 5)
5. Cosmic magnetism has a profound effect upon life on Earth.
6. Astronomy can greatly benefit from the application of machine learning techniques to images.
7. Browsing through a 'gallery of fluid motion' can provide a qualitative overview of astrophysical turbulence phenomenology.
8. Processes in the human body can be as astronomically complex as processes in the universe.
9. One of the Supervisor's responsibilities during the PhD dive is to tug you back when the allure of the deep-blue becomes a siren's song.
10. All children are gifted; just some haven't yet opened their gifts.
11. One must always hold fast to one's pocket of common sense lest one risk being deprived of it. (Ya. B. Zeldovich, as paraphrased from a retelling by Prof. A. Shukurov.)
12. Use what talents you possess; the woods would be very silent if no birds sang there except those that sang best. (Henry van Dyke)

Carl Shneider
Leiden, 17 December 2015