



Measuring properties of magnetic fields in astrophysical fluids

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Many astrophysical fluids are strongly magnetized and in turbulent state. Since magnetic fields affect many physical processes, measuring their properties is of great importance. First, I will briefly talk about physics of Alfvénic MHD turbulence in strongly magnetized media, which will be starting point of further discussions. Second, I will talk about techniques to measure properties of magnetic fields from observations. I will focus on techniques that utilize observations of synchrotron emission and dust polarization. It is well known that synchrotron emission is polarized in the direction perpendicular to magnetic field. On the other hand, interstellar dust grains tend to be aligned with magnetic field and thermal emission from aligned grains is also polarized in the direction perpendicular to magnetic field. Therefore, if we observe polarization of synchrotron emission or thermal radiation from dust grains, we can derive information about magnetic field. Third, I will discuss various issues related measurement of magnetic field from observations.

References

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