

# FAST Proposal Coverpage

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**Project Name: Faraday tomography of the Milky Way Galaxy with FAST**

**Project Summary:**

Magnetic fields play a crucial role in almost all astrophysical processes such as star formation, cosmic ray transport and acceleration. However, a complete picture of magnetic fields versus scales is yet to be established. FAST is the largest single-dish telescope and will produce observations of large-scale diffuse emission from the Milky Way Galaxy with unprecedented sensitivity and resolution. We propose to conduct a polarization survey of the Galaxy with FAST and apply Faraday tomography to retrieve magnetic fields over scales from pc to kpc. This will advance our understanding of origin and evolution of magnetic fields, which is one of the fundamental problems of modern astrophysics. As a pilot study, we propose to map a supernova remnant: the Cygnus Loop. We would also like to get access to data from CRAFT to investigate the possibility that the polarization survey could be conducted in commensal with CRAFT.