

Proposal Abstract:

The Smith High-velocity Cloud stands as a significant probe into the complex processes occurring at the halo-disk interface of our Galaxy. The interplay between magnetic fields and gas dynamics in such environments is poorly understood, yet it is fundamental for studying the origin and physics of high-velocity clouds in the Milky Way. The Zeeman effect provides a direct method for measuring the magnetic field of the interstellar medium and yields more plausible results than other hypothesis-based methods. Our proposal aims to utilize the high sensitivity of the FAST telescope to take Zeeman measurements of HI emission lines from the Smith Cloud, thus opening a new window on the role of magnetic fields in the dynamics of High-velocity clouds.