
Observational Evidence for Magnetic Dips in Solar Prominences

S. W. Lee¹, H. S. Yun¹, J. Chae², G. S. Choe³, J. H. Kim¹, P. R. Goode²

¹Astronomy Program, SEES, Seoul National University, Seoul, Korea

²Big Bear Solar Observatory., New Jersey Institute of Technology, Big Bear City, USA

³Princeton Plasma Physics Laboratory, Princeton University, USA

In the present work we report observational evidence for magnetic dips based on the mass motion seen in prominences. It has been a long-standing mystery as to how cool and dense plasma material in prominences can be supported against gravity. A common wisdom has been to assume magnetic field configurations with magnetic dips which supply an upward magnetic tension. A number of proposed theoretical models have the dip structure as a supporting mechanism of the dense plasma material. Nevertheless, the existence of magnetic dips in prominences has a scant observational underpinning mainly because of the difficulty in determining 3-D magnetic fields in prominences. We have found an oscillatory overshooting out of a prominence main body, which is very naturally accounted for as mass motion along dipped magnetic field lines sagging under gravity.