

Ion-neutral Coupling in Solar Prominences

H. Gilbert¹, C. R. DeVore², J. Karpen¹, T. Kucera¹, S. Antiochos¹, and R. Kawashima³

¹*NASA Goddard Space Flight Center, Greenbelt, MD 20771, USA*

²*NRL, Washington, DC, USA*

³*University of Tokyo, Tokyo, Japan*

Coupling between ions and neutrals in magnetized plasmas is fundamentally important to many aspects of heliophysics, including our ionosphere, the solar chromosphere, the solar wind interaction with planetary atmospheres, and the interface between the heliosphere and the interstellar medium. Ion-neutral coupling also plays a major role in the physics of solar prominences. By combining theory, modeling, and observations we are working toward a better understanding of the structure and dynamics of partially ionized prominence plasma. Two key questions are addressed in the present work: 1) what physical mechanism(s) sets the cross-field scale of prominence threads? 2) Are ion-neutral interactions responsible for the vertical flows and structure in prominences? We present initial results from a study investigating what role ion-neutral interactions play in prominence dynamics and structure. This research was supported by NASA.