Asymmetric Magnetic Reconnection in Partially Ionized Chromospheric Plasmas

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Magnetic reconnection is a ubiquitous process in the solar chromosphere. Realistic models of chromospheric reconnection must take into account that the plasma is partially ionized. Asymmetric reconnection in the chromosphere may occur when newly emerged flux interacts with pre-existing, overlying flux. We present simulations of asymmetric reconnection in weakly ionized, reacting plasmas where the magnetic field strengths, densities, temperatures, and ionization fractions differ in each upstream region. The simulations show considerable thinning of the current sheet, asymmetric decoupling of ions and neutrals in the inflow regions, and plasmoid formation late in time. We will discuss these simulations in the context of newly available observations from the Interface Region Imaging Spectrograph (IRIS) and present opportunities for validation against laboratory reconnection experiments.