

# **Supplementary Information for**

## **Magnetic Reconnection in the Plasma Disk at 23 Jupiter Radii**

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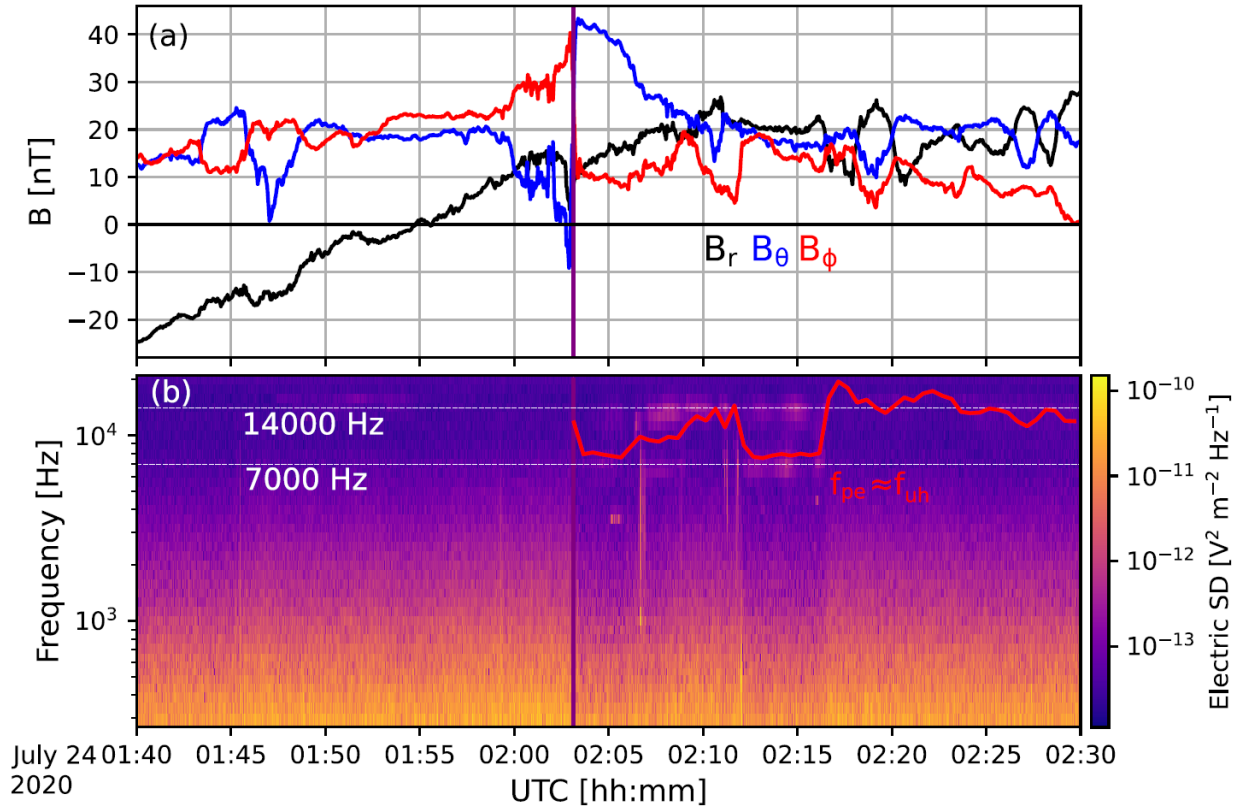
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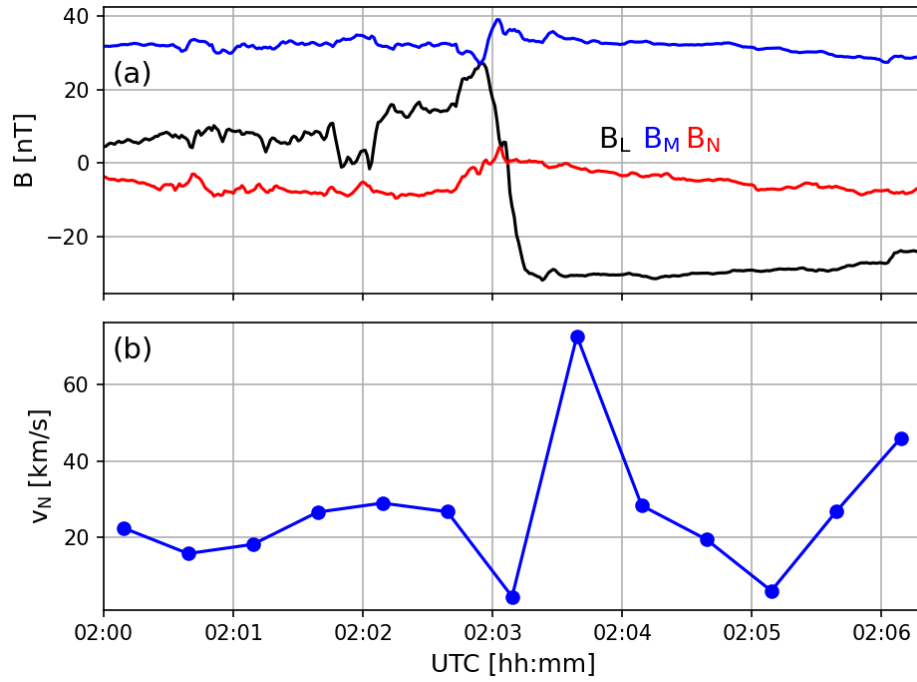
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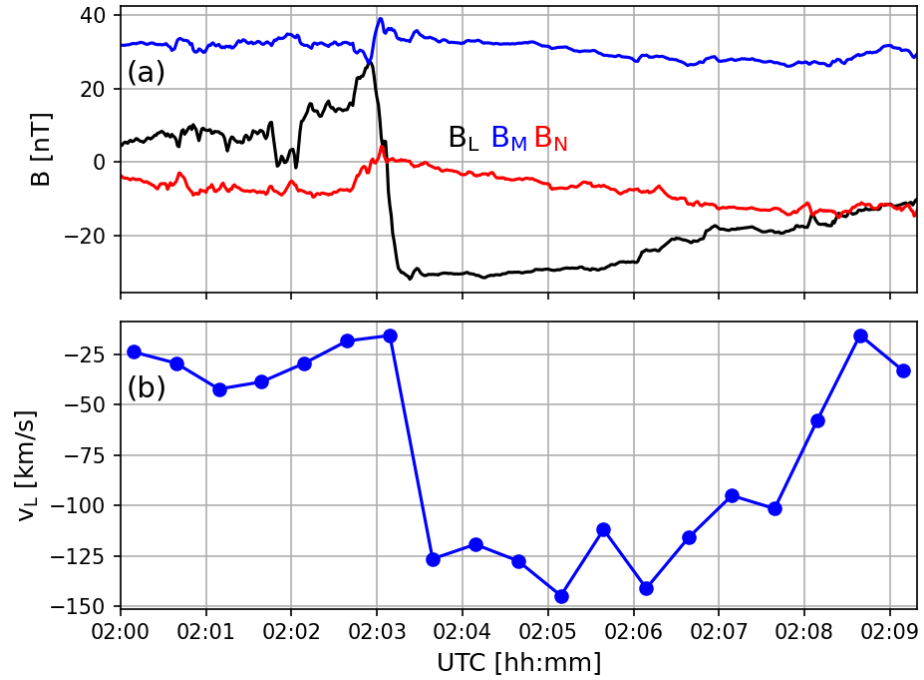
Supplementary Figures 1 to 5



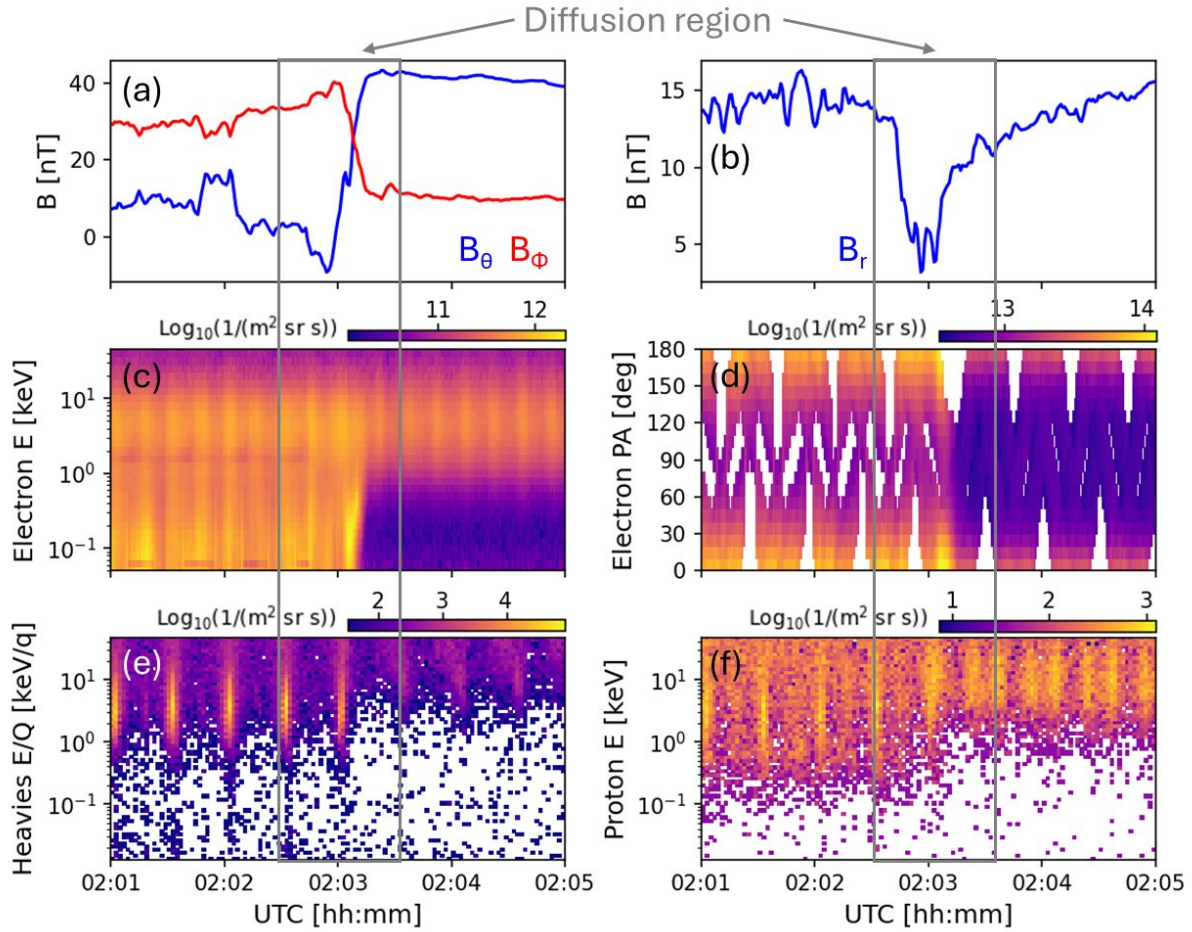
**Supplementary Fig. 1. Plasma wave observations associated with the magnetic reconnection event.** Panels (a) and (b) show the magnetic field in the JSS coordinate system measured by Juno's MAG instrument and the spectral density (SD) measured by the electric antenna of Juno's Waves instrument, respectively. Harmonic plasma waves near 7,000 Hz and 14,000 Hz are observed. The observed wave frequencies are comparable to the electron plasma frequency ( $f_{pe}$ ) and the upper hybrid frequency ( $f_{uh}$ ), as indicated by the red solid line. The thick, solid purple line indicates the location of the current sheet. Source data are provided as a Source Data file.



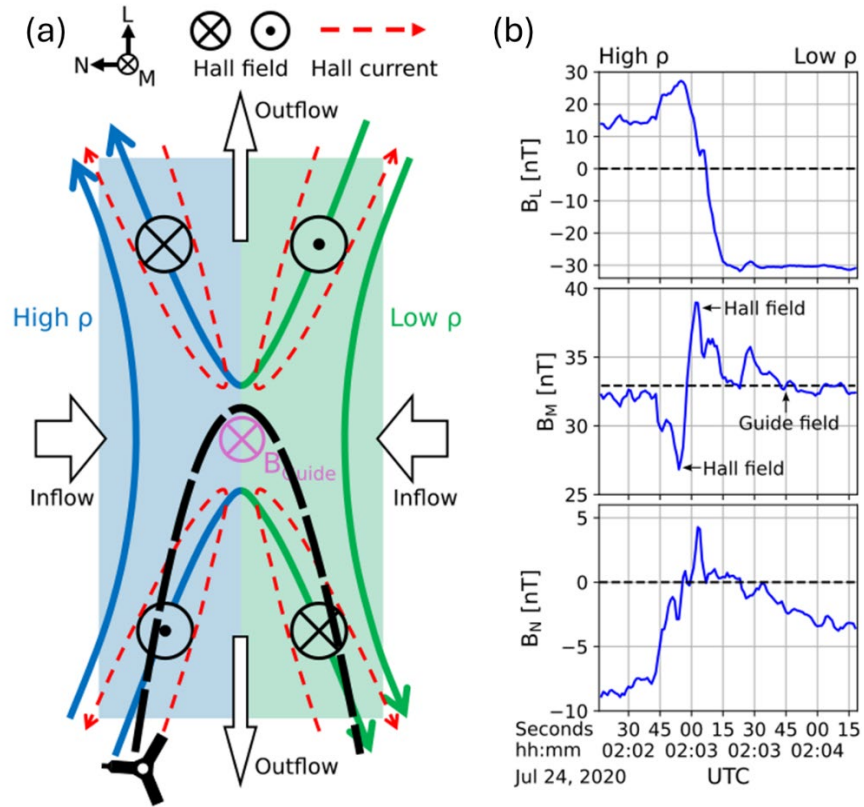
**Supplementary Fig. 2. Magnetic field and plasma velocity component during the magnetic reconnection event.** (a) The magnetic field in the LMN coordinate system; (b) the plasma flow velocity in the normal direction of the current sheet (i.e.,  $v_N$ ). Source data are provided as a Source Data file.



**Supplementary Fig. 3. Magnetic field and plasma outflow velocity accelerated by the magnetic reconnection event.** (a) The magnetic field in the LMN coordinate system; (b) the outflow velocity after magnetic reconnection (i.e.,  $v_L$ ). Source data are provided as a Source Data file.



**Supplementary Fig. 4. The magnetic field and plasma observations near the diffusion region of the magnetic reconnection event.** (a,b) The magnetic field in the JSS coordinate system; (c) the electron flux spectra; (d) the electron pitch angle distribution; (e) the heavy ion flux spectra, and (f) the proton flux spectra. All data are presented at the highest available resolution. Source data are provided as a Source Data file.



**Supplementary Fig. 5. The ion diffusion region observation with an arch-shaped path of Juno.** (a) Illustration of the diffusion region. Juno traverses the region from the high-density (high  $\rho$ ) side to the low-density (low  $\rho$ ) side with an arch-shaped path. (b) Magnetic fields in the LMN coordinate system. Source data are provided as a Source Data file.