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The data in this repository is used for some of the figures in the following *Journal of Geophysical Research* paper (2025):

Evolution of Force-Free Magnetic Structure in the Dayside Ionosphere of Mars

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Short abstract:

The ionosphere of Mars is infused with magnetic fields generated by the interaction of the solar wind with the ionized and neutral gas of the atmosphere. The magnetic fields measured by the magnetometer onboard the Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft exhibit spatial and temporal variations (i.e., structures) with scales ranging from the global/planetary down to small scales of just a few kilometers. The magnetic field in some of these structures is such that it does not exert a force on the fluid (i.e., so-called force-free structures) and this study explores how this might happen.

Funding for this work was supported by NASA Grant NNN10CC04C to the University of Colorado and by subcontract to the University of Kansas. The MAVEN project is supported by NASA through the Mars Exploration Program.

This paper is primarily theoretical, but it does include some NASA MAVEN data in some the figures illustrating the theoretical results. All the MAVEN data can be found in NASA's Planetary Data System (PDS) but the material in the KU repository provides the data in the form needed for some of the Figures. Much of the data comes from MAVEN's orbit 3087. It is collected in an excel spreadsheet (both data and Figures). In addition, powerpoint files are provided, for convenience for two schematics in the Paper (Figure1 and Figure 12).

Files in this KU repository submission

1) *B3087tec2025JGRdata.xlsx*

An excel file with data from the NASA MAVEN orbit 3087 plus plots.

2) *KHberlok.xlsx*

An excel file with data and a plot of a Kelvin-Helholtz instability growth rate vs. wavenumber.

3) *R12.pptx*

A powerpoint file with a schematic of a magnetic flux at Mars.