MESSENGER Observations of Standing Whistler Waves Upstream of Bow Shock of Mercury

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Additional Supporting Information (Files uploaded separately)

1. Caption for Tables S1
2. Caption for Figure S1

Introduction

In file Tables S1, we list some parameters of 36 standing whistler waves, and the description of parameters in each column is as follows:

1. Column "Event", the serial number of the wave events.
2. Column "Start", the start time of the wave events.
3. Column "End", the end time of the wave events.
4. Column "$\Theta bn/°$", the angle between upstream magnetic field and shock normal.
5. Column "$\Theta kn/°$", the angle between wave vector and shock normal.
6. Column "$\Theta kb/°$", the angle between wave vector and upstream magnetic field.
7. Column "Damping ditance/km", the distance from shock along wave vector when amplitude of waves damp to 1/e in the spacecraft coordinate frame (SCF).
8. Column "T_0/Twave", ratio between the time interval T_0 from shock when amplitude of waves damp to 1/e and wave periods in the SCF.
9. Column "Frequency/Hz", the frequency of waves in the SCF.
10. Column "$\delta Bwave/Bup$", relative wave amplitude: ratio of wave amplitude to upstream magnetic field intensity.
11. Column "Bdown/Bup", ratio of downstream magnetic field intensity to upstream magnetic field intensity.
12. Column "M_A", Alfvén Mach number

In file Figure S1, we compressed all figure of wave events into this file, and the description of every figure as follows:

1. Subgraph "(a)", magnetic field intensity.
2. Subgraph "(b)", component of magnetic field in aberrated Mercury solar magnetic (MSM) coordinates.
3. Subgraph "(c)", component of the magnetic field of wave after removing the background magnetic field in minimum variance analysis (MVA).
4. Subgraph "(d)", the variations of the total power along shock normal in the SCF.
5. Subgraph "(e)", magnetic field of the wave in the maximum-intermediate plane after removing the background magnetic field.
6. Subgraph "(f)", power spectral density of magnetic field after removing the background magnetic field.
7. Subgraph "(g)", location of bow shock in the X-$\rho(\sqrt{Y^2 + Z^2})$ plane .Black curve is best fit conic section from Winslow et al. (2017) . Black arrow is shock normal. Blue arrow is wave vector.