

## Large amplitude magnetic field oscillations in the Venus magnetosheath

*E. Golbraikh<sup>1</sup>, S.N. Walker<sup>2</sup>, M.A. Balikhin<sup>2</sup>, M.E. Gedalin<sup>1</sup>, T.L. Zhang<sup>3</sup>*

<sup>1</sup>Department of Physics, Ben-Gurion University, PO Box 653, 84105 Beer-Sheva, Israel

<sup>2</sup>Department of Automatic Control and Systems Engineering, University of Sheffield, Sheffield, S1 3JD. U.K.

<sup>3</sup>Space Research Institute, Austrian Academy of Sciences, A-8042 Graz, Austria.

### Abstract

Magnetic field measurements at Venus show that large amplitude quasi-coherent oscillations of the magnetic field are often present in the magnetosheath. These oscillations typically start some distance behind the shock transition, although in several cases the delay is not pronounced. The oscillations are elliptically polarized with the axis ratio varying within 1-2. The spatial scale is comparable to the ion gyroradius, if the oscillations are standing in the magnetosheath.

We study the relation of the features of these oscillations to the angle between the shock normal and the upstream magnetic field. We also investigate whether these oscillations may be identified as planar large amplitude Alfvén waves, Alfvén vortices, or Kelvin-Helmholtz vortices.