

Distribution of plasma and magnetic field in the Venus induced magnetosphere is strongly asymmetrical

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Abstract

Venus Express spacecraft have provided us a wealth of in-situ observations of characteristics of induced magnetosphere of Venus. One of its important features is a distinct asymmetry in plasma and field characteristics between the hemisphere pointed in the direction of the motional electric field and the opposite hemisphere. Asymmetry starts from formation of the magnetic barrier, then continues to low altitudes where effects of finite conductivity become important and further to the near Venus tail where the magnetic tail and plasma sheet are formed. As a result, the structure and dynamics of the induced magnetosphere in both hemispheres occur different. We present different aspects of such an asymmetry and discuss possible mechanisms of its appearance.