

Abstract Submitted
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Segmented plasma flow meter using simulation and regression techniques¹ GUANGDONG LIU, RICHARD MARCHAND, Univ of Alberta — Ionospheric wind is an important physical parameter in monitoring and understanding space dynamics. A relatively simply design, the segmented flow meter (SF meter) is proposed for measuring plasma flow and other space plasma parameters. This study is carried out by first using Particle in Cell simulations to calculate the response of the SF meter to space environments in a wide range of plasma conditions representative of the ionosphere at low latitudes. A solution library containing ion currents collected by several sensors in the SF meter is then constructed under the specified conditions. The solution library, is then used to build a predictive model for the flow velocity, using regression techniques such as radial basis functions and neural networks. The input to the model is a set of ion currents collected by different segments of the flow meter, and the output is a set of plasma parameters such as plasma density. This model can be used to predict various of plasma parameters such as transverse speed, the density, the ion effective mass, etc.

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