



## **1D hybrid simulations of ion cyclotron waves generated by mass-loading at Io**

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Ion cyclotron waves generated by newborn sulfur monoxide and sulfur dioxide pickup ions were detected by the Galileo spacecraft as it passed by the jovian moon, Io. The characteristics of the waves can be used to infer the plasma and pickup conditions there. To better understand the relationship between mass loading rate and wave amplitude we conduct 1D hybrid simulations (kinetic ions, fluid electrons) of newborn sulfur monoxide and sulfur dioxide ion injection into an Io torus-like plasma. We find that wave growth begins when the newborn ion density is less than several percent of the total ion density. The wave power exhibits linear growth until saturation after which it remains at a relatively constant level that is proportional to the newborn ion injection rate.