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The Stable Gas Plume of Enceladus

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Cassini made passes by the Enceladus plume at varying geometry over the full span of the mission. In addition to enabling us to explore the full geometry of the plume, these data can be used with MHD simulations to estimate the outgassing rate. Cassini has measured 50% variation in the ambient plasma density around the interaction region during the 10 years. We apply the measured plasma density as an upstream condition to simulate each of the passes respectively. By finding the best fit to the measured magnetic field perturbations, we obtain the total intensity of the plume during each of the flybys. We find over the course of the mission a nearly stable plume. Specifically there is no correlation with apoapsis or periapsis as reported from other observations.