Simulations of the CG Plasma Environment

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Cometary plasma environments have been simulated for nearly 50 years. Early semi-analytic models were followed by 2D and 3D MHD descriptions, hybrid and fully kinetic models. The level of sophistication of these models got a great boost from the first cometary fly-by missions. Rosetta provided an opportunity to observe the development and temporal evolution of the plasma environment of a moderately active comet that represents a major modeling challenge since both continuum and kinetic processes play important roles. This presentation will briefly outline the various simulation methods and their main results. We will also present new results from the new simulation model developed at the University of Michigan.