

## **The plasma environment of Venus: Comparison of Venus Express ASPERA-4 measurements with 3D hybrid simulations**

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We use data of the ASPERA-4 ion and electron spectrometers onboard Venus Express to determine the locations and shapes of the plasma boundaries (bow shock, ion composition boundary and mantle) at Venus and compare our fits with previous models obtained by PVO and Venera 9, 10 observations. Additionally we investigate the variation of the terminator bow shock position as a function of the solar wind dynamic pressure and solar EUV flux. We put this data analysis into context with a 3D hybrid simulation, developed by Bagdonat and Motschmann for the interaction of solar wind with weak comets. In the hybrid model, the ions are treated as particles, whereas the Lorentz-force can act on each particle and the electrons are modeled as a massless charge neutralizing fluid. The planetary heavy ion plasma is generated by an oxygen ionosphere and exosphere adapted to a profile, which depends on the solar zenith angle (Chapman layer). We compare our simulation results with the ASPERA-4 IMA (Ion Mass Analyser) and ELS (Electron Spectrometer) data which includes a discussion of the plasma boundaries and escape fluxes from the planet.