



## **Electron density measurements from the shot noise collected on the STEREO/WAVES antennas**

**I. Zouganelis** (1), S.D. Bale (2), K. Goetz (3), M. Maksimovic (1) and J.-L. Bougeret (1)

(1) LESIA, Observatoire de Paris, CNRS, UPMC, Université Paris Diderot, 5 place Jules Janssen, 92190 Meudon, France, (2) Space Sciences Laboratory, University of California, Berkeley, CA 94704, United States, (3) University of Minnesota, School of Physics and Astronomy, Minneapolis, MN 55455, United States

One of the most reliable techniques for in situ measuring the electron density and temperature in space plasmas is the quasi-thermal noise spectroscopy. When a passive electric antenna is immersed in a stable plasma, the thermal motion of the ambient particles produces electrostatic fluctuations, which can be adequately measured with a sensitive wave receiver connected to a wire dipole antenna. Unfortunately, on STEREO, the S/WAVES design does not let us use this high accuracy technique because the antennas have a large surface area and the resulting shot noise spectrum in the solar wind dominates the power at lower frequencies. We can use, instead, the electron shot noise to infer the plasma density. For this, we use well calibrated Wind particle data to deduce the base capacitance of the S/WAVES instrument in a special configuration when the STEREO-B spacecraft was just downstream of Wind. The electron plasma density deduced is then compared to the STEREO/PLASTIC ion density and its accuracy is estimated of up to 10%.