

CALCULATING THE PARTICLE-FIELD CORRELATION IN A FLOWING PLASMA

C. A. de Koning and J. W. Bieber

Bartol Research Institute, University of Delaware, Newark, DE 19716, USA.

It is well known that the solar wind includes an electric field, $\vec{E} = -\vec{V}_{SW} \times \vec{B}$. Using the Vlasov equation as a starting point, and including the electric field, application of quasi-linear theory leads to an expression for the correlation between the fluctuations in the magnetic field and the phase space density, $\langle \delta \vec{B} \delta f \rangle$. Because the solar wind is non-relativistic, it is possible to derive a variation of the standard adiabatic approximation, which leads to a tractable expression for $\langle \delta \vec{B} \delta f \rangle$.