



Pick-up process in different regions of the cometary environment

Zoltan Nemeth, Karoly Szego, Katalin Lukacs, and Geza Erdos

Institute for Particle and Nuclear Physics, MTA Wigner RCP, Budapest, Hungary (nemeth.zoltan@wigner.mta.hu)

The original distribution of the pick-up ions immediately after the pick-up is generally thought to be a ring in velocity space. Although this really is the case in a slowly-changing magnetic field, in a region of significant magnetic field fluctuations the situation is very different. In the latter case each freshly picked-up particle feels a different magnetic field. This leads to a nontrivial source distribution in velocity space, which resembles a signet-ring. The exact form of this distribution depends on the properties of the magnetic field fluctuations in the region of the pick-up, as well as on the ion species.

Here we present the theory describing the pick-up process in a fluctuating environment, as well as source distributions computed from measurements made in various regions of the induced magnetospheres of comets.