



Acceleration of Solar Wind by Parallel Electric Fields

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A unique feature of the SW ions (H^+ and He^{++}) is that they appear as beams in the velocity space. We have investigated the possibility that electric fields parallel to the magnetic field direction could accelerate the solar coronal particles producing these beams. The current paradigm is that SW particles travel together with the same mean velocity. This restriction applies only to beams flowing perpendicular to B . Beams flowing parallel to B can have any speed. We have examined Cluster SW data and explain with a simple potential drop model how beams form as the solar thermal plasma is accelerated by a parallel electric field.