

Magneto-thermal Reconnection Processes in Solar Coronal Loops

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An endogenous magnetic reconnection process involves a driving factor that lays inside the layer where a drastic change of magnetic field topology occurs. A process of this kind takes place when an electron temperature gradient, which is the driving factor, is present in magnetically confined plasma and when the evolving electron temperature fluctuations are anisotropic. The newly developed theory [1] of such a reconnection process is applied to the solar coronal loop plasma for a possible explanation of the coronal heating and of the generation of high energy particle populations. The physical parameters that are used as inputs to the theoretical model [1] are based on the most recent observations of the Corona from the Atmospheric Imaging Assembly (AIA) on the Solar Dynamics Observatory (SDO) and Extreme Ultraviolet Imaging Spectrometer (EIS) on Hinode. *Supported in part by NASA IRIS mission, the U.S. D.O.E and the Kavli Foundation.

[1] B. Coppi and B. Basu, Phys. Lett. A, 382, 400 (2018).