Equilibria, Current Sheet Formation and Heating of the Magnetically Confined Corona

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Parker model for coronal heating is investigated within the framework of reduced magnetohydrodynamics (RMHD) in cartesian geometry. Equilibria and nonlinear dynamics are studied numerically giving a new relation for the minimal twist required for dynamics to occur and current sheets to form. These equilibria are shown not to be linearly unstable. Beyond the critical twist nonlinear dynamics lead to current sheets formation, whose thickness is tracked with the analiticity strip method and shown to decrease down to dissipative length-scales on fast ideal Alfvenic timescales. The impact on the heating of solar and stellar coronae will be discussed.