

Exercises for Space Plasma Physics:

XI. Solar Corona

1. Why is the solar magnetic field important for the structure and dynamics of the solar corona?
2. How can the MHD-equations be simplified to study the evolution of the solar corona in quiet and active times?
3. The solar corona is much hotter as the solar surface. How can this happen. Our normal life experience tells us that it becomes colder as farer one moves away from a heat source.
4. What is the difference between an ideal and resistive MHD-instability?
5. If plasma and magnetic field (plasmoids) are ejected in a coronal mass ejection, magnetic reconnection must occur at some point. Why? It is not entirely clear, however, if reconnection is the driver of the eruption or just occurs in the aftermath. Describe briefly both scenarios.
6. Is the heat conduction parallel and perpendicular to magnetic loops the same or different?
7. What are scaling laws and are they useful?