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How do driving time scales effect energy release in the solar corona?

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Since the discovery of the hot solar corona, a wide variety of mechanisms have been proposed for maintaining the high temperatures. The majority of these models fall into one of two broad categories, either AC (alternating current) or DC (direct current) heating. The distinction between these two groups arises from the characteristic time scales of the photospheric motions which are the source of the required energy. AC models are associated with short time scale driving and DC models with long time scales.

Despite decades of investigation, debate continues about the relative importance of AC and DC heating in different regions of the corona. In either case, the rate of energy injection is sensitive to both the imposed velocity profile (driver) and the form of the atmospheric magnetic field. The interaction of the driver with the coronal field has important consequences for energy budgets. With this in mind, I will present the results of a series of numerical simulations of coronal heating in general settings. By modifying the characteristics of an imposed, random driver, I will compare the expected energy release rates and the atmospheric response for AC and DC driving.

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