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The Tectonics Model of Coronal Heating: Unsteady Dynamics and Scaling in Statistical Steady State[1] C.S. NG, Geophysical Institute, University of Alaska Fairbanks, L. LIN, A. BHATTACHARJEE, Center for Integrated Computation and Analysis of Reconnection and Turbulence, University of New Hampshire — The tectonics model of coronal heating, proposed by Priest et al. [Astrophys. J., **576**, 533 (2002)] envisions coronal heating caused by a hierarchy of current sheets produced by the movement of a myriad of flux elements in the magnetic carpet covering the Sun. We have recently obtained new scaling results in two dimensions (2D) suggesting that the heating rate becomes independent of resistivity in a *statistical* steady state [C. S. Ng and A. Bhattacharjee, Astrophys. J., **675**, 899 (2008)]. Our numerical work has now been extended to 3D. Random photospheric footpoint motion is applied to obtain converged average coronal heating rates. In the large Lundquist number limit, we find that the heating rate is independent of the Lundquist number, with average magnetic energy saturating at a constant level due to the formation of strong current layers and subsequent disruptions. In this talk, we will present our latest numerical results from large-scale 3D simulations, and discuss differences with previous scaling laws.

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Chung-Sang Ng
University of Alaska Fairbanks

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