# NEW CHALLENGES IN SPACE WEATHER SIMULATIONS

**T.I. Gombosi**

*Center for Space Environment Modeling, University of Michigan*

The current generation 3D coronal models uses photospheric line-of-sight magnetograms to establish the lower boundary conditions. Typically, the plasma temperature and density at the base is chosen in order to provide agreement with in-situ measurements of the solar wind speed at 1 AU. Due to the fact that coronal heating and momentum deposition remain poorly understood, the energetics of coronal plasma are treated with ad-hoc terms or simplified polytropic equations-of-state to energize the solar wind. New methods that use observations of the white-light corona are needed to improve the solution.

Solar rotational tomography has emerged as a powerful technique for determining the 3D distribution of electron density from coronagraph images of the polarized brightness. The combination of solar rotational tomography with MHD modeling of the corona has the potential to vastly improve the accuracy of coronal modeling. This talk will present some of the initial work in this direction.