

DYNAMICS OF CORONAL ACTIVE REGIONS

L. Ofman

Department of Physics, Catholic University of America, and NASA Goddard Space Flight Center, Code 612.1, Greenbelt, Maryland, USA

Solar active regions are highly structured magnetized regions, with increased temperature, and density compared to 'quiet sun', and are the sources of solar activity, such as flares and coronal mass ejections (CME's) that drive the dynamical processes in space plasma. The magnetic structure, and dynamics of these regions in the corona is poorly understood, and waves can be used as 'probes' to study the physics of active region. I will present the results of recent observations, and multidimensional MHD models of waves in active regions, and in the active region 'building blocks' - coronal loops. In particular, I will present the results from three-dimensional MHD simulations of waves in realistic models of coronal active regions, and loops. The models of the active regions are constructed by using the observed photospheric magnetic field, and gravitationally stratified coronal density structure with individual loops. I will compare the results of the models to SOHO and TRACE satellite observations, and discuss the application of the results to the study of active region dynamics, and structure.