

NON-LINEAR DYNAMICAL MODELS OF SOLAR DYNAMO

I.N. Kitiashvili

Kazan state university, Astronomy dept., Russia

Solar dynamo is a very complicated non-linear oscillatory MHD process, which is far from understanding. It produces 11-year sunspot cycles, which show chaotic behavior and are hard to predict. It has been suggested that the basic oscillatory behavior of the solar dynamo can be described in terms of simple non-linear dynamical systems. I apply methods of qualitative analysis of dynamical systems and numerical techniques to investigate the phase and bifurcation properties of these systems. Also, I describe how data assimilation methods can be applied for relating these models to the solar-cycle data and for studying their predictive capabilities.