

Poster

Title: Effect of magnetic fluctuations on the buoyant rise of magnetic flux

Name: William Edmunds

Abstract:

A full explanation of the evolution of magnetic fields in the solar tachocline requires an understanding of the interaction between strong magnetic fields and convection.

As a simple model we consider the evolution of a buoyant uniform layer of horizontal magnetic flux in an atmosphere consisting of magnetic fluctuations.

Magnetic fluctuations are generated and maintained in the atmosphere by a forced velocity field operating on a weak magnetic field component transverse to the horizontal magnetic layer.

We examine the evolution of the buoyant layer in the presence of the forced velocity field with and without the magnetic fluctuations.

We show that the magnetic fluctuations generate coherent, twisted magnetic structures on the length scale of the magnetic fluctuations.

This has possible implications to the formation of active regions for a deep-seated solar magnetic field.