

Prof. Aake Nordlund

Title: Couplings at the Solar Surface

Abstract.

I will discuss and exemplify the energy budget of magnetic flux transport, emergence, and conversion to heat and kinetic energy, using both analytical tools and numerical examples.

Magnetic flux transport below the solar surface is responsible for structuring the magnetic field into a hierarchy, which appears at the solar surface with solar Active Regions as the "tip of the iceberg". One can understand the inner workings of this mechanism by analyzing the magnetic energy equation, which expresses changes in magnetic energy as a result of transport, work, and dissipation. The same type of analysis can be applied to elucidate magnetic flux emergence through the solar photosphere, and the dynamics and heating of the solar corona.

As part of the discussion, the use of visualization tools -- in particular VAPOR (by NCAR) -- will be discussed