



HAO Colloquium Series

(Refreshments served)

Speaker: Jan Stenflo, ETH Zurich

Time: 3:00–4:00 pm

Date: Wednesday, June 5, 2013

Location: CG1-2126

Title: Horizontal or vertical magnetic fields on the quiet Sun

Abstract:

Different analyses of identical Hinode SOT/SP data of quiet-sun magnetic fields have in the past led to contradictory answers to the question whether the angular distribution of field vectors is preferentially horizontal or vertical. These answers have been obtained by combining the measured circular and linear polarizations in different ways in order to derive the field inclinations. A problem with such combinations is that the circular and linear polarizations scale with field strength in profoundly different ways. Here we avoid such problems by using an entirely different approach that is based exclusively on the fundamental symmetry properties of the transverse Zeeman Effect for observations away from diskcenter, without any dependence on the circular polarization. Systematic errors are suppressed by the application of a doubly differential technique with the 5247-5250 Å line pair for observations with the ZIMPOL-2 imaging polarimeter on the French THEMIS telescope on Tenerife. This allows us to determine in a model- and resolution-independent way how the angular distribution of the intranetwork magnetic fields changes from being preferentially vertical in the lower and middle photosphere to become preferentially horizontal in the upper photosphere.