

HAO Colloquium Series

(Refreshments served)

Speaker: Steven Balbus, Oxford University

Time: 1:30–2:30 pm

Date: Wednesday, December 4, 2013

Location: CG1 – 1210 South Auditorium (also webcast at <http://www.fin.ucar.edu/it/mms/cg-live.htm>)

Title: Rotation and Convection in the Sun

Abstract:

Helioseismology techniques have revealed the details of the Sun's internal rotation with remarkable precision. Except near its upper boundary, the radiative zone is nearly uniformly rotating, whereas in the convective zone rotation is (except near its lower boundary) generally constant on cones, dominated by a latitudinal gradient. In this talk, I will try to show how a standard thermal wind balance plus a few simple dynamical ideas naturally reproduce this pattern, and offer some suggestions as to what may be happening in the solar tachocline and why solar baroclinicity is inevitable. The theory predicts very different internal rotation for stars (or suitable planets) lacking a radiative-convective boundary surface.