

HAO Colloquium Series

(Refreshments served)

Speaker: Joseph Plowman, HAO/Montana State University

Time: 1:30–2:30 pm

Date: Wednesday, November 13, 2013

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

Title: Temperature Reconstruction of Coronal Data

Abstract:

I will present a recently developed method for reconstruction of the temperature distribution (i.e., the Differential Emission Measure or DEM) of the solar corona. The method is very fast, computing 16 million DEMs from a set of full-resolution, full-disk AIA images in less than 40 minutes on a single CPU core. I briefly describe the method, demonstrate its fidelity, and touch on the ill-posedness inherent in any DEM inversion. As a particular application, I will show an analysis of the heating of coronal loops observed simultaneously by EIS and AIA, combining DEMs and density sensitive line ratios. The temperature and density profiles of the loops are compared to and isolated from those of the surrounding material, and these properties are fit to an analytic strand heating model developed by Martens (2010).