HAO Colloquium Series

(Refreshments served)

Speaker: **Shaela Jones—University of Marlyland/NASA Goddard**

Time: **1:30 pm**

Date: **Wednesday, February 2, 2011**

Location: **CG-1, South Auditorium**

Title: **Rigid Rotation: Coronal Conundrum or Observation Effect?**

Abstract: The solar photosphere rotates differentially, with the fastest rotation rate at its equator and gradually decreasing rates with higher latitude. In contrast, the corona seems to rotate more rigidly, at something close to the equatorial photospheric rotation rate. This difference is puzzling, since logically it seems that if magnetic features in the corona are rooted in the photosphere as they appear to be, then either they must rotate at the photospheric rate or they must undergo shear and even separation from the fields below them on an ongoing basis. Such a process could have important implications for the perennial problems of coronal heating and CME initiation.

It has been suggested that coronagraph measurements, on which the evidence for rigid coronal rotation is largely based, may not be reliable due to the influence of projection effects. Here I will present measurements of coronal rotation using the STEREO COR1 coronagrahs during 2007 and 2008. I will show, via comparison with tomographic reconstructions, that the relative rigidity of the rotation measured here is not an observation effect due to projection.

Assuming that the rotation of the corona is latitudinally rigid, it is very important to understand the radial profile of the rotation rate. I will also discuss the increase in the rotation period observed previously between LASCO C1 and C2 (between approximately 2.0 – 2.5 solar radii) and possible reasons we find no such increase in the COR1 field of view (1.5 – 4.0 solar radii) during the two years studied.