

## HAO Colloquium Series

(Refreshments served)

**Speaker:** Tibor Torok, Predictive Science, Inc.

**Time:** 1:30–2:30 pm

**Date:** Wednesday, November 6, 2013

**Location:** CG1 – 1214 North Auditorium (also webcast at <http://www.fin.ucar.edu/it/mms/cg-live.htm>)

**Title:** Modeling Solar Eruptions: Where Do We stand?

**Abstract:**

Solar flares and coronal mass ejections involve massive releases of energies into the heliosphere and are the main driver of space weather disturbances near Earth. It is now well accepted that these enigmatic events are manifestations of a sudden and violent disruption of the Sun's coronal magnetic field. However, although such eruptions have been studied for many years, the detailed physical mechanisms by which they are initiated and driven are not yet fully understood; primarily because of our present inability to accurately measure magnetic fields in the corona. Numerical models have become a powerful tool to help us overcome this limitation. Global simulations of solar eruptions are particularly challenging, because of the enormous disparity of the relevant scales. While the steady advance of computational power has enabled us to model eruptions with ever increasing detail and realism, many questions remain unanswered. In this talk, I review what we have learned from numerical modeling about the physical processes associated with solar eruptions and I will discuss the current limitations and future prospects of models.