



## Announcing

**A Seminar Presentation  
on May 10, 2013 at 10:30 am  
in Henry Lee 301**

**at The University of New Haven**

**Dr. Nikodem Poplawski**

Department of Physics, Indiana University

**Title: The Universe and black holes in gravity with spin  
and torsion**

### **Abstract:**

The Einstein-Cartan theory of gravity naturally extends general relativity to include the quantum-mechanical, intrinsic angular momentum of elementary particles, which equips spacetime with a geometric property called torsion. Torsion becomes significant only at extremely high densities, existing in the very early Universe and in black holes, where it counters gravitational attraction and prevents the formation of singularities. It also suggests a scenario in which every black hole is a wormhole that produces a new universe on the other side of its event horizon. Accordingly, our own Universe may be the interior of a black hole existing in another universe, with the Big Bang replaced by a Big Bounce. This scenario may also explain the arrow of time, the matter-antimatter asymmetry, and why the observed Universe is spatially flat and isotropic.

### **Further Information**

For further information, please contact the Department of Mathematics.