
Physics Colloquium

"Detecting Gravitational Waves (and doing other cool physics) with Millisecond Pulsars"

**Scott Ransom, astronomer
National Radio Astronomy Observatory
Charlottesville Virginia**

**Friday February 8, 2013
4:10 – 5:00 pm, EPS103**

Abstract:

The first millisecond pulsar was discovered in 1982. Since that time their use as highly-accurate celestial clocks has improved continually, so that they are now regularly used to measure a variety of general relativistic effects and probe a variety of topics in basic physics, such as the equation of state of matter at supra-nuclear densities. One of their most exciting uses though, is the current North American (NANOGrav) and international (the International Pulsar Timing Array) efforts to directly detect nanohertz frequency gravitational waves, most likely originating from the ensemble of supermassive black hole binaries scattered throughout the universe. In this talk I'll describe how we are using an ensemble of pulsars to try to make such a measurement, how we could make a detection within the next 5-10 years, and how we get a wide variety of very interesting secondary science from the pulsars in the meantime.

Host: Neil Cornish

Refreshments 3:45 p.m. EPS 2nd Floor Atrium