



## **Physics Colloquium**

**Friday 13<sup>th</sup> September, 2013**

**4:10 – 5:00 pm, EPS108**

**“I-Love-Q”**

**Dr. Nico Yunes,  
Department of Physics, MSU**

### **Abstract:**

Neutron stars and quark stars are not only characterized by their mass and radius, but also by how fast they spin, through their moment of inertia, and how much they can be deformed, through their Love number and quadrupole moment. These depend sensitively on the star's internal structure, and thus on unknown nuclear physics. In spite of this, we have found universal (I-Love-Q) relations between the moment of inertia, the Love number and the quadrupole moment that are independent of the neutron star's and quark star's internal structure. These can be used to learn about neutron star deformability through observations of the moment of inertia, break degeneracies in gravitational wave detection to measure spin in binary inspirals, and test General Relativity in a nuclear-structure independent fashion.

### **Host:**

Jiong Qiu

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