

# **TUFTS UNIVERSITY**

## **Physics and Astronomy Colloquium**

**Rachel Somerville**  
**Rutgers University**

**“The mysterious intertwined life-cycle  
of galaxies and their supermassive  
black holes”**

“It is now widely believed that most massive galaxies harbor supermassive black holes in their nuclei, and that the mass of the black hole is strongly correlated with galaxy properties such as mass or luminosity. In addition, the evolution of the global star formation rate density over cosmic time seems to closely trace that of the global black hole accretion rate, suggesting that galaxies and their black holes grew together. However, in individual objects, star formation and black hole growth often appear to be uncorrelated. Moreover, many questions remain about the origin and evolution of supermassive black holes in galaxies, for example: what are the masses and physical origin of the first seed black holes? How is black hole activity triggered and regulated? How does the energy released by accreting black holes shape their host galaxies? I will address these questions by presenting predictions from theoretical models that attempt to track the intertwined growth of galaxies and their black holes in a cosmological context, and confronting these predictions with recent observations from multi-wavelength surveys.”

**3:00 pm**  
**Friday, October 12, 2012**  
**Robinson 253**  
**Medford Campus**

*Refreshments served at 2:30 in The Knipp Library, Room 251*