

A background image filled with various physics equations and formulas in different colors and sizes, including  $E_k = \frac{1}{2}mv^2$ ,  $pV = nRT$ ,  $E = mc^2$ , and  $F = ma$ .

# Physics Department Candidate Colloquium

**Dr. Angela Capece**

**Research Physicist – Princeton Plasma Physics Lab**

## *Postcards from the Plasma Edge: Understanding the Plasma-Materials Interface*

A plasma is an ionized gas that contains reactive species such as electrons, ions, radicals, and excited neutrals that interact with surrounding material. Plasmas can be spectacularly destructive; however, when harnessed in the proper way, they can provide unique reaction pathways that enable material modification of everything from semiconductors to living tissue. In this talk, we will discuss the processes that occur at the plasma-surface interface and explore how the nature, composition, and properties of both the plasma and material surface strongly affect each other. We will discuss examples from ion thrusters and fusion plasmas to illustrate how the chaotic environment at the plasma edge can be manipulated to help improve the operation and increase the lifetime of these devices. The implications of this work and how it can be applied to other problems in plasma-materials interactions will also be presented.

**Date: Friday, December 5, 2014**

**Time: 12:30 PM**

**Location: SCP 317**