

# Physics Colloquium

**Michigan Technological University**

Thursday, March 26, 2009

4:00 pm

Room 139 Fisher Hall

## **Billiards at the Nanoscale: Colliding Molecules at Millikelvin Temperatures**



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**Sponsored by SPS**

**Abstract:** The process of breaking one chemical bond and forming another is challenging to understand at a quantum mechanical level. This basic understanding is important to any molecular reaction. However, the complicated quantum nature of these processes is difficult to explore experimentally because full control over all degrees of freedom is required. We create ultracold molecular systems to study interactions and simple chemical reactions while controlling both the internal and external degrees of freedom in the quantum regime. Currently, we are investigating the interactions of cold dipolar molecules with magnetically trapped atoms. Not only will this increase our understanding of fundamental molecular interactions, but it also has direct applications to atmospheric and deep space chemistry.

**Biography:** I received my B.S. in physics from Michigan Technological University in 1997. Next, I entered the graduate program at the University of Colorado and worked in the group of Eric Cornell. I studied spinor Bose-Einstein condensates and earned my Ph.D. in 2002. I received a National Research Council fellowship to work at NIST in the group of Jun Ye. We cooled molecules for high-resolution spectroscopic studies related to the change in fundamental constants. Then in the fall of 2005, I entered my current position as an Assistant Professor of Physics and Associate Fellow of JILA.