



*Presenting*

**Allen Landers, PhD**

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Physics Graduate Program Officer  
Department of Physics  
Auburn University

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FOR MORE INFORMATION PLEASE  
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# PHYSICS COLLOQUIUM

**Atoms and Molecules Illuminated  
from Within**

Molecules in the gas phase are unique quantum systems in that they exhibit many fundamental quantum mechanical effects and are yet complex enough to challenge the most rigorous theoretical treatments. Exploring these quantum systems in detail is challenging in large part because molecules in the gas phase are randomly oriented as molecules tumble and translate through space. I will describe a series of experiments that allows us to look at molecules that are “fixed-in-space,” enabling observation of collective quantum phenomena in the gas phase. In particular, I will show how a resonant electron “wave” propagates through a molecular potential, interrogating the molecule as it emerges from one of the core atomic/molecular orbits, and how simultaneously measuring multiple particles allows for a “complete” determination of the quantum states of an isolated molecule.

Augusta University Summerville Campus

**Friday, October 25, 2019  
Science Hall, W1002, 2:30p.m.**

**Graduate School Session:  
Science Hall W3015, 1 p.m.**