

# **SPECIAL CHEMICAL PHYSICS PHYS-681 SEMINAR SERIES**

## **“Getting Friendly with Molecules”**

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### **Course Description**

Physicists often quote a dictum by Arthur Schawlow: “A diatomic molecule has one atom too many!” In response, this seminar will treat basic aspects of the interaction of two atoms, with an evangelical motivation. About the first third of our meetings will briskly examine key features of electronic structure, chemical bonding, and spectroscopy. The rest will treat more fully molecular collision theory, chiefly two-body elastic scattering and some of the simpler inelastic processes involving rotational, vibrational, or electronic excitation. A major aim will be to contrast classical and quantum descriptions of collisions and to show how they are reconciled by semiclassical methods that greatly facilitate evaluation of observable properties and provide striking heuristic insights. The seminar will emphasize discussion, often led by student members who volunteer to elucidate and improve on an “official” set of Notes that I have drafted. Much of the discussion will be focused on canonical problems and questions related to current research. Prerequisites: familiarity with the rudiments of classical and quantum mechanics and eagerness to acquire a broader perspective and “minds-on” practice working with molecular theory.

**Thursday, September 11, 2008\***

**5:30 p.m. Room 105 B**

**Zachary Building**

**Texas A&M University  
Department of Physics**

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\* Other meetings are Tuesday, Thursday of weeks: Sept 8, Sept 29, Nov 10, Dec 1, others as announced