

### **Spinning PVC Molecules (Designed by Mindy):**

Goal: Students will understand that specific objects only rotate in certain ways. This is connected with the discrete energy levels of rotating molecules studied in astrochemistry.

This is a fun, outdoor, qualitative exercise. Students throw pre-made sections of PVC pipe and observe how they spin. The pipes are weighted at each end, some evenly and some unevenly, to represent different diatomic molecules. Students observe the rotation in the air of the pipe. It will rotate about its center of mass. Students will try throwing the pipe with different speeds and spins and observe the results.

Construction of Model: Cut a 1 inch diameter PVC pipe into 1 foot long sections. Fasten pennies or other weights to one or both ends. Make certain that the weights are secured tightly to avoid a potential safety hazard. Using insulating spray and end caps is suggested.