Our summer research project was to make high-voltage cables and to build a cosmic ray detector using parts from the bigger particle detector being built at Jefferson Lab in Virginia. The components of the cosmic ray detector are:

- plastic scintillators (plastic that emits light when a particle passes through it);
- wave-shifting optical fibers (they absorb blue light from the scintillator and emit green light) attached to the scintillator using a special optical glue;
- photomultiplier tubes (PMTs) which detect the light from the optical fibers;
- electronics (to amplify the PMT voltage and output a pulse to a counter).

There are two parts to the detector, one set of scintillator bars above another set. The two parts detect the downward direction of particles that bombard the Earth’s surface from space. The pictures below show us building the cosmic ray detector.

We also took a trip to Jefferson Lab, a national accelerator facility, to see the full-size detector. Below are some pictures from our two-day trip there to tour the lab.