

SCIPP Internship, July 2005

Performance Assessment

This year's program was an ambitious plan to build new cosmic ray scintillation detectors, develop a version of the Muon Lifetime Experiment suitable for high school use, as well as to develop and test 4 different sets of Data Acquisition Electronic boards.

Extensive opportunities to learn about high energy physics, cosmic rays, electronics, mathematical analysis, hardware programming, String Theory, & Dark Matter were offered to the interns. They were offered the use of research-grade test equipment, specialized materials, and frequent access to very knowledgeable and creative individuals such as Professors Sadrozinski and Schalk (Hartmut and Terry) as well as all of the very helpful grad students and lab technicians.

The interns experienced many successes as well as stumbling blocks, delays, and frustrations. There was a constant need to clearly identify objectives of every step and the expected results for each test and then how to troubleshoot and retest. This led to inspiring success as well as grueling frustration and long hours.

The six students who participated as interns were outstanding high school students with many exemplary skills. They were knowledgeable, excited, personable, interested, and willing to work hard. Their performance would have earned them an A grade in any high school course.

The purpose of a research internship program, however, goes far beyond high school level work. Besides the completion of the assigned work, the underlying objectives are to foster the development of skills necessary for success at a university as well as in a career. Here then, were the underlying challenges and opportunities for growth that faced these interns.

These include objectives such as:

- Self-motivation: The interns accept the objectives as their own. Success becomes personal.
- Self-direction: Interns develop their own plan of action from their objectives. They are able to request guidance or suggestions when needed.
- Communication skills: Interns are able to communicate their progress and problems to others during regular progress meetings. They also are able to formulate appropriate and relevant questions when stymied by a problem.
- Teamwork: Working as part of a team is a given in today's world. It provides greatly increased resources but it also requires special working skills: communication, cooperation, & responsibility.

- Research: The ability to formulate a clear and concise description of needed knowledge and then to identify, extract, and understand this knowledge is crucial to any project.
- Planning: Each objective requires an extensive network of steps that must be successfully completed and tested prior to the next level. One must keep the entire network clearly in mind and plan ahead for any additional equipment, materials, tests, or research that might be necessary for later steps especially while waiting for the completion of a current step.
- Perseverance: A project of this kind can be overwhelming and frustrating for students with no previous experience at this level. This is NOT a high school science lab activity that is to be completed within one hour. The ability to turn frustration into renewed commitment with fresh thinking is crucial to a successful career.