

## Lab 1

This lab is a demonstration lab. The objective is to look at different types of real computer based data acquisition and control systems in real life. In addition we will see the importance of correct signal termination of fast signals for preserving amplitude, shape and timing qualities.

1. Visit to Pelletron laboratory. 1) High precision positioner control using LabView and RS-232 interfaces. 2) Advanced feedback controlled simple stepper motor control for a RBS channelling system. Advanced PIC-based stepper motor control system. 3) RBS-PIXE system with PIC control and feedback. PXI data collection systems for fast throughput. 4) demonstration of earth-loop avoidance procedures.
2. VME/CAMAC based large scale data acquisition at RITU with time stamping.
3. Control system for the cyclotron.
4. Demonstration of importance of matching impedance on cables. We will use a long coaxial cable and observe the effect of reflections as well as open and closed circuits.

## Report

The systems shown represent different systems with different demands. Make a short table that characterises the different systems that you have seen in terms of:

- a) Developer competence
- b) Operation complexity
- c) Need for reliability
- d) Need for user friendliness
- e) Extendability