

# Cosmic Telescope

## Introduction

A cosmic telescope is being built in the Group-C laboratory at SLAC, which will allow the testing of 3D sensors with cosmics. The telescope will consist of 3 scintillators for triggering, and 4 pixel detector modules for use as tracking planes.

### To-Do list:

- Find scintillators/PMT's for the trigger. There may be some available at End Station A.
- Design/build physical support structure for telescope.
- Design circuit logic for trigger - need discriminators, simple coincidence detection.

### Components Needed:

- Scintillators (2) - Needed for trigger. Preferably as small as possible.
- PMT (2) - Needed for trigger.
- Pixel Modules (4) - We have these.
- Box for DUT's - Need box for holding 4 or 5 3D pixel sensors at once. Need to be able to align each of the sensors separately in the x-y plane, since the 3D devices are all different. Philippe has an idea for this that has been used previously.
- Cosmic Telescope support structure - This needs to be built. We will give the design to Marco.
- Power supplies:
  1. Low voltage: 2.0 V (1.5 A) and 1.6 V (0.8 A) needed for the chips. Needed for 5 devices (4 for pixel modules, 1 for MCC). Because of large currents, cannot use single power supply for all devices.
  2. High voltage for the sensors. 4 pixel modules, plus 4 or 5 DUT's.
  3. High voltage for the 2 PMT's.
- DAQ - 48 V power supply for HSIO. May need to get an ATCA crate for the RCE. Alternatively, we could keep the RCE on the lower floor.
- trigger logic - coincidence logic, timing.
- rack - Hopefully can put everything (telescope, power supplies, DAQ, logic for trigger) in a single rack.

## Documentation

- [Martin Kocian's talk describing DAQ](#) from August 21, 2009 SLAC ATLAS upgrade meeting.