Backward EC EMC Update

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Status of Spiral Strip Production

- The Bergen machine shop has used the computer-controlled milling machine
- Despite several promises they have not tried to cut the spiral strips
- I got another promise from the machine to produce spiral strips in the fall
- This is frustrating but I don't know how I can influence this

Manpower Issues

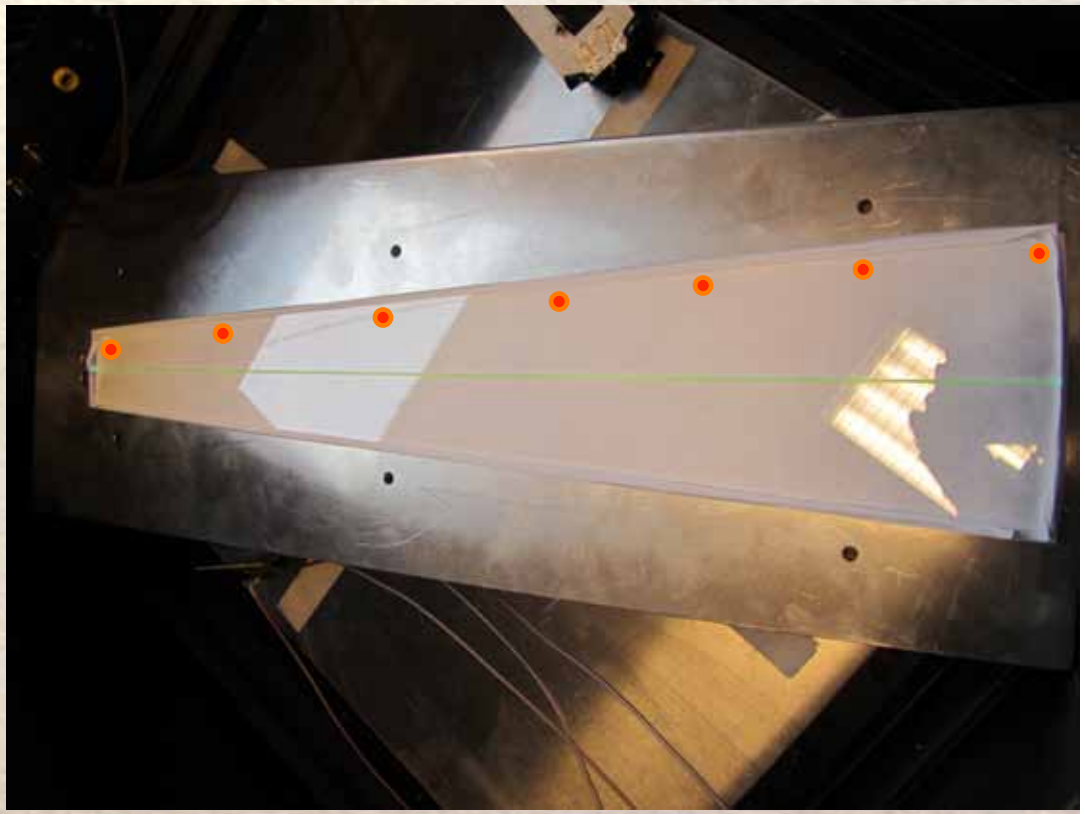
- Zhuo Zhou who spent the summer at CERN has started with strip testing
- Justas Zalieckas who is now my new ATLAS PhD student continues to help out
- Due to lacking support from Norway, Steinar Stapnes converted the AIDA postdoc position into a technical PhD student position
- Steinar Stapnes secured 50k ChF from the Norwegian Reasearch Council, 50k ChF from Bergen and the rest from CERN
- Now I need to find a suitable candidate who will be hired for 3 years
  - He will be stationed mainly at CERN and travel to Bergen
  - Earliest date January 2013
- Please let me know if you have a good candidate

Present Activities

- Backward endcap section in TDR is completed
- Now work on finalizing costs and schedule
- We restarted our test facility after Zhuo returned from CERN late August
- The start up took over 2 weeks, since someone deleted our labview program and all data files
- Now we are ready to
  - Test uniformity of all sector strips (use trigger from light pulser)
  - Measure absolute light yield of each sector trip with ^{90}Sr
  - Test all MPPCs and glue them to the fiber
  - Perform measurements with SPIROC chip

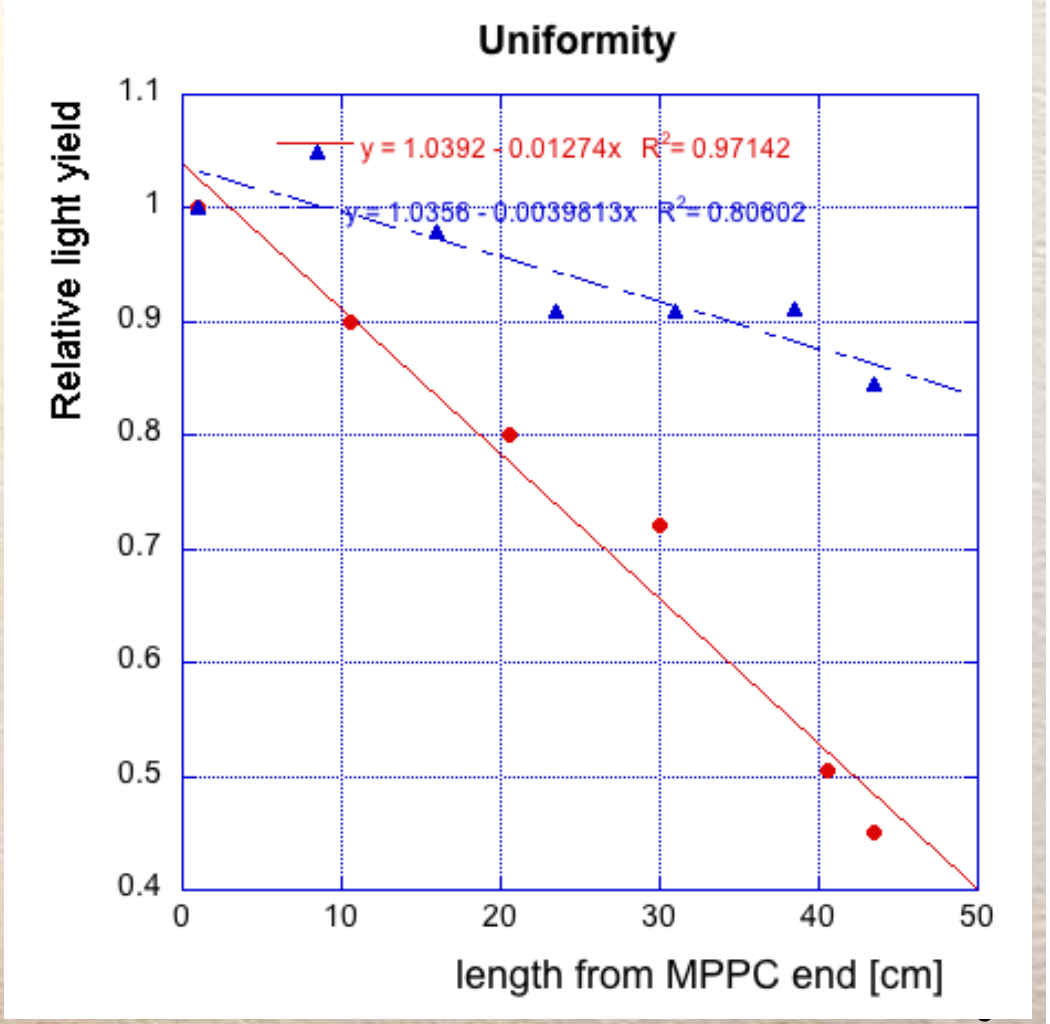
Light Yield and Uniformity Measurements

- Remeasure non-uniformity of strip with UV LED
- Top and bottom faces are covered with TYVEC
- Side faces are covered with Teflon tape
- Measure light yield at 7 positions half a cm off outer rim spaced equidistantly every 7.5 cm
- Measure peak position of light distribution
- Normalize to point closest to MPPC
- Use random trigger



Uniformity Measurements

- Zhuo remeasured the uniformity of the strip with UV light pulser last night
- Light loss along the strip is less than 80%
- This is inconsistent with a previous measurement that confirmed a light of x_{inner}/x_{outer}
- We need to understand this discrepancy
- Improve setup by triggering light pulser trigger plus random trigger
- We work on a simulation of the light collection

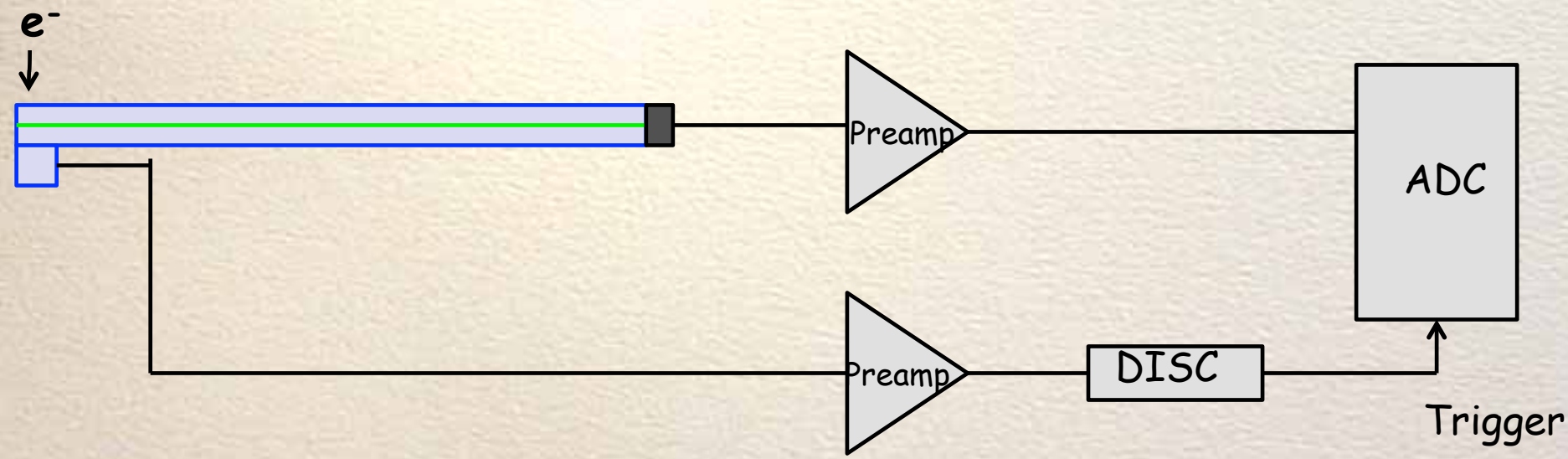


Procedure to Achieve Uniform LY

- Zhuo will simulate the production of scintillation light in the strip, reflection at the boundaries, absorption and reemission in the fiber and detection in the MPPC
- The idea is to reproduce the measured non-uniformity first
- Then to introduce a pattern of black dots on the Tyvec to make light yield uniform
- Print this pattern on the Tyvec and confirm result by measurements

Absolute Light Yield Measurements

- Place scintillator below strip and use signal as trigger



- Collimate source so that electrons are nearly perpendicular to scintillator ➔ narrows signal
- Trigger helps to reduce number of random events

Conclusions

- The production of spiral strips has not made any progress
- Backward EC TDR section is completed, finalize costs and schedule
- We have resources to hire technical PhD student
- We have reactivated our lab activities and started strip testing