

# Cables

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<http://www.hep.ph.qmul.ac.uk/~landon/talks>

## Overview

- TileCal Cables
- Cabling Document

# TileCal Cables (1)

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## Background

- TileCal will pay, but we are supposed to be “responsible”.
- Calo trigger needs 9 signals from the barrel, 6 from extended barrel. TileCal would like to allow 1 extra pair in case we ever want to sum the 0.8-1.0 overlap regions off the detector.
- Aim has been to use cables as similar to those from LAr as possible, but with fewer than their 16 pairs.
- The barrel muon trigger also needs signals (7 and 6) from the back sampling of barrel and extended barrel. These were expected to come on separate cables (from separate adders and connectors on the TileCal drawers).

# TileCal Cables (2)

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## Discussion at CERN

- Steve, Nick and I talked to Rupert Leitner and Richard Teuscher at the end of May.
- Aim: sort out TileCal cable specification (a) for the signal cable review (held at CERN last month) (b) for our connectivity document (c) so that Rupert can buy them
- They have provided a short note describing the requirements for the signal cable. However no pinouts are included yet.
- Chris Parkmans cable database has been updated.
- Can we consider tests of our electronics with theirs next year, before and at the test beam?
- New suggestion for the signal cables....

# TileCal Cables (3)

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## Combined calorimeter and muon signal cables?

- Mark Hatch is worried there may be a space problem in the cable trays from the extended barrel. No room for two 16 pair cables. Maybe not even room for two smaller cables.
- Can we consider using just one 16 pair cable which carries both calorimeter and muon signals? This could be just for the extended barrel, or for the barrel as well.
- This cable would go to the calo receivers where a patch panel would be needed to split off the muon signals.

# TileCal Cables (4)

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## Considerations

- Nick is not worried about the extra latency for the barrel muon trigger.
- We were anyway considering a patch panel for merging the two cables from barrel and extended barrel to make one input into the receivers.
- We can just order more of the LAr specification cables. No more investigation, testing, etc required.
- TileCal has enough money to buy one set of cables, not two.
- The cables would need to be split into two connectors at the TileCal end.
- A single cable for the calo and muon signals from the barrel would preclude any future splitting of the 0.8-1.0 region of the barrel into two towers.
- Should we worry about grounding?

# Cabling Document (1)

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## Requirements

- Deliverable for the ASSO – deadline April 2002.
- Aim to have a single document which completely specifies the numbering, layout and pinout for:
  - Cables from LAr EM tower builder boards (TBBs), HEC/FCAL tower driver boards (TDBs) and from TileCal drawers to receivers.
  - Patch panels for TileCal receiver inputs (merging barrel and extended barrel).
  - Receiver interconnect daughter boards (remapping input to output signals).
  - Patch panels (or “octopus cables”) for some receiver to PPM cables.
  - Receiver and PPM crate layout
  - LVDS cabling from PPMs to CPMs and JEMs.

# Cabling Document (2)

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## Sources of information

- Bill Clelands notes on the receiver system and EM cabling.
- Recently supplemented by a new note on HEC and FCAL cabling.
- PPM specification.

## Missing information

- Details of the TileCal cables, eg pinouts, numbering system, etc.

## For us to define

- Interconnect boards on the receivers to remap calorimeter inputs to the desired outputs for the PPMs.
- Patch panels and/or “octopus cables” to split or merge either receiver inputs or receiver-PPM cables.

# Cabling Document (3)

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## Spreadsheets, spreadsheets

- Steve and I produced a number of spreadsheets in April.
- Overview of numbering scheme covering the whole trigger tower space (extending Bills original scheme).
- Extension of Bills receiver crate and cable tables to cover layout of trigger crates and LVDS cables, including all patch panels.
- Definition of all required receiver interconnect daughter boards (20 different types).
- Definition of detailed pinouts of all patch panels or octopus cables.
- All these, plus copies of Bills notes, are available via  
<http://www.hep.ph.qmul.ac.uk/~london/atlas/cabling>
- All sent to Bill Cleland for comment...



# Cabling Document (4)

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## Recent developments

- Bill Cleland commented on our spreadsheets a few weeks ago.
- He has now produced a detailed document for the HEC and FCAL signals which were not described in detail before and where consequently we had made many wrong assumptions.
- We have started updating our spreadsheets to match...
- But this is not yet finished and there has been little or no work done on the text of a document to wrap around spreadsheet tables. (Babies and software development have taken precedence).