

Report from Tracker Upgrade Project Office

- Mandate of the TUPO
- Members
- Organization of meetings
- Topics discussed so far (brief overview)
- Conclusions/Outlook

Mandate of the TUPO

- Clear definition in the notes from the last Upgrade Steering Committee from GMB

The Upgrade Project Office has to overview the activities of the working groups, to coordinate the progress on integration issues that involve work from different working groups, and to possibly identify aspects that need attention and that may not be covered directly by any of the working groups.

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Coordination, communication, system engineering

Members of the TUPO

- Working group conveners
- Track trigger task force conveners
- Mechanics coordinator, Electronics coordinator, Review Manager
- Upgrade coordinators
- Tracker Project manager
- TUPO conveners

hans-christian.kaestli@psi.ch,
Alessandro.Marchioro@cern.ch,
m.raymond@imperial.ac.uk,
geoff.hall@cern.ch,
jan.troska@cern.ch,
Simon.Kwan@cern.ch,
Panja.Luukka@cern.ch,
alberto.messineo@pi.infn.it,

Katja.Klein@cern.ch,
Marcello.Mannelli@cern.ch,
arndt@physics.purdue.edu,
Frank.Hartmann@cern.c,
Alexander.Dierlamm@cern.ch,
Roland.Horisberger@cern.ch,
Francois.Vasey@cern.ch,
Duccio.Abbaneo@cern.ch

Gino.Bolla@cern.ch,
Peter.Sharp@cern.ch,
rlschmitt@fnal.gov,
Hans.Postema@cern.ch,
anders.ryd@cornell.edu,
Gian.Mario.Bilei@cern.ch,
Antti.Onnela@cern.ch,

Organization of meetings

- Meetings take place on Wednesday afternoon
 - In weeks that do not contain other major meetings
 - No TUPOs during TK days, CMS weeks, Upgrade workshops, major conferences
 - Effectively \approx 2 meetings /month on average
- Typically the meeting is divided in two sessions: 14:00-16:00 and 16:30-18:30, with one topic per session
 - Sometimes there is only the second session
 - Preferred because more US-friendly
- Try to keep the meeting useful: if the key people cannot be present, rather cancel/postpone
- Additional people are explicitly invited depending on the topic
 - An EVO session is always booked, with no password
 - The agenda (not protected) is available at
 - <http://indico.cern.ch/categoryDisplay.py?categId=2421>
- Anybody is always welcome to “spy” on the topics discussed and join the meeting

Choice of topics and documents

- Topics are chosen with input from WG conveners
 - Input not overwhelming, so far...
- Presentations and summary documents attached to the agenda
 - Topics appear in the meeting title, to help finding back the info
 - Dedicated web site may be needed at some point...
- Until now mostly focused on phase II strip upgrade
 - Possibly to be evolved

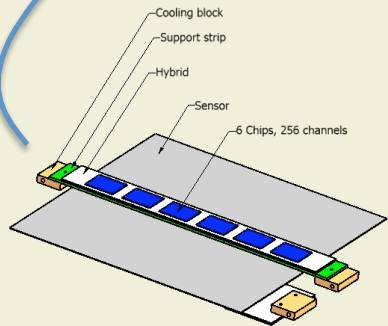
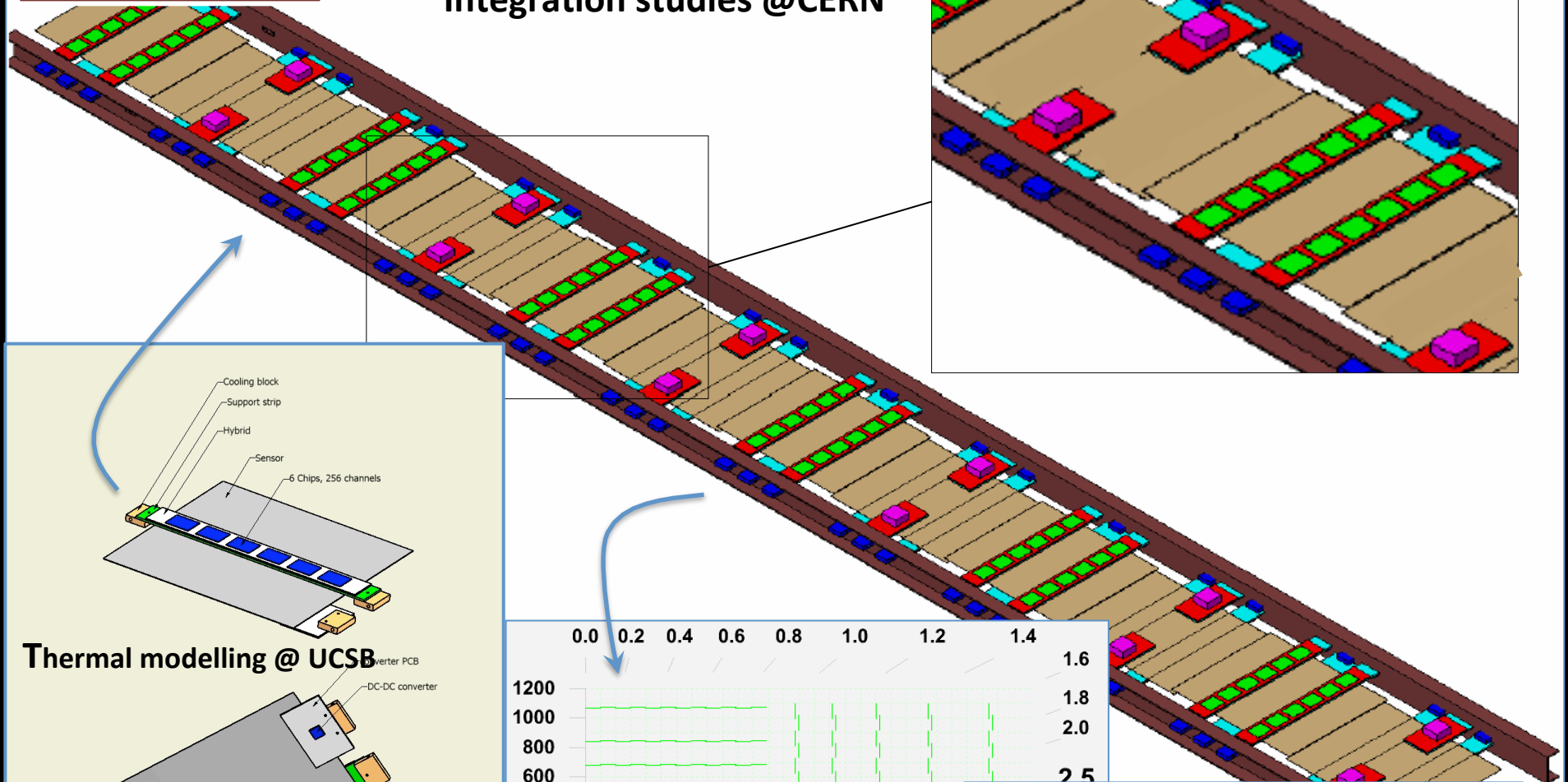
Modelling of outer layers

- Study of system aspects for outer layers
 - Input from sensors, electronics, powering, mechanics
- First model for the integration
 - Including electronics, mechanics, cooling
- Purposes
 - Validate key aspects
 - Identify possible weaknesses and correct if needed
 - Keep as reference to evaluate alternative options and possible further improvements

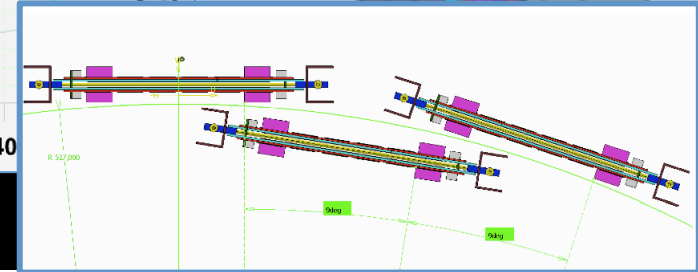
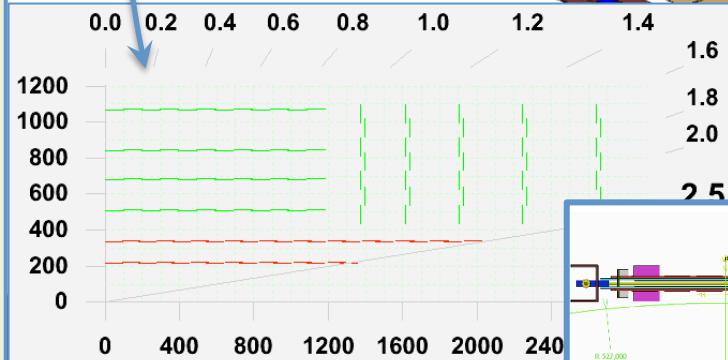
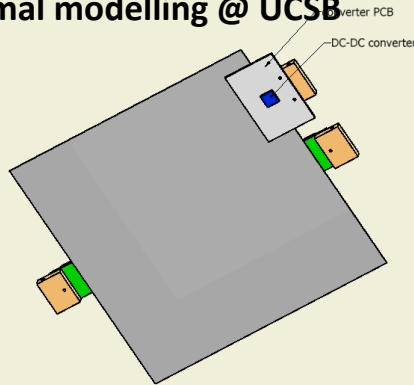
Modelling of Outer Layers (readout only)

Work in progress

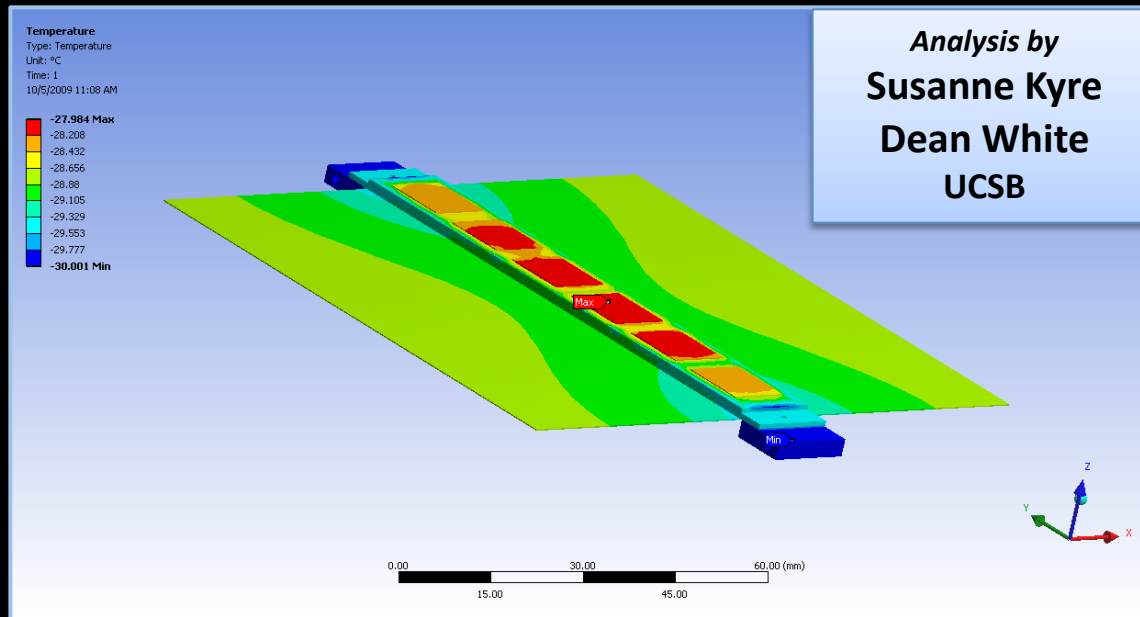
Integration studies @CERN



Thermal modelling @ UCSB



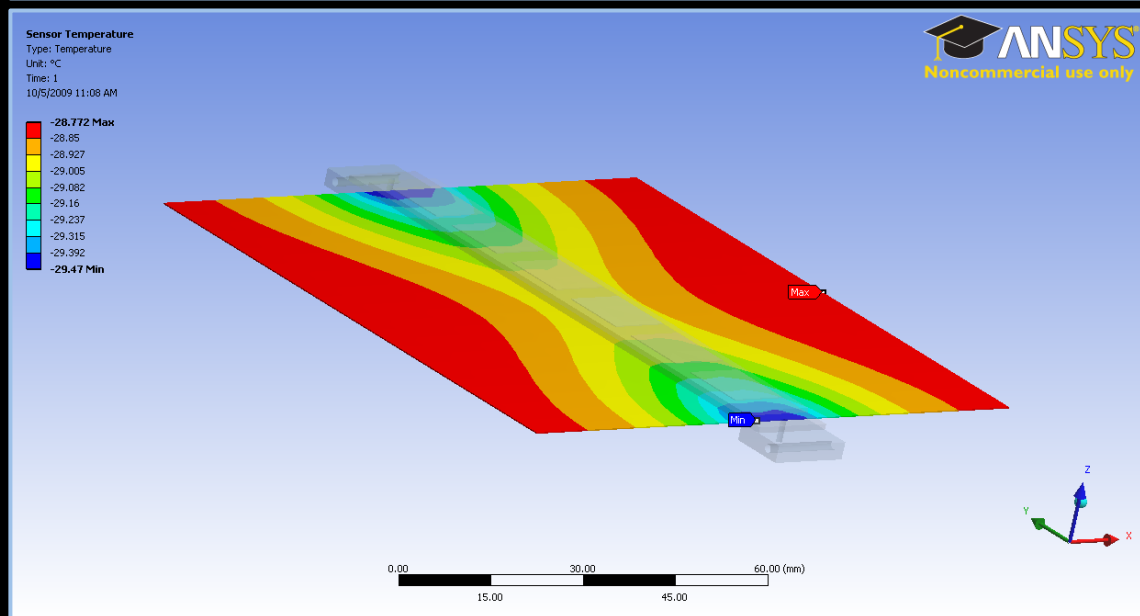
Result of steady state thermal analysis for one of the options



Max. Temperature:
-28.0°C (at center chips)

Max Sensor Temperature:
-28.8°C

ΔT between Cooling block
and Sensor: 1.2°C



- Model to be evolved – results not yet to be taken at face value
- Good indication that a TPG strip can efficiently remove heat from the hybrid (and the sensor)
- Now planning prototyping and experimental measurements to validate the model

Outlook for Outer Layers

- Refine and complete 3-d model
 - Especially connectivity at the rod end
- Continue study of thermal performance
 - Evolve the model
 - Validate with experimental measurements on mechanical prototypes
- Implement changes and/or evaluate other options
 - Depending on results
- Expect contributions from DESY as well

Other topics discussed

- Powering, links, sensors
 - Useful input for successive system studies
- R&D on monolithic pixels
 - Decided to postpone study of system aspects to after the first submission
- Irradiation facilities, beam telescope
 - Information and open issues in view of sensor qualification
- Plan for HPK sensor work
 - Discussion on organization, management, schedule
 - Upcoming on November 24: traceability and database
- Integration of P_T layers
 - Compilation of part list, requirements on connectivity etc...
 - Done with all the experts around the table (+EVO)
 - Links, electronics, power...
 - Will serve as basis for first integration and cooling studies

For each meeting minutes (or relevant document) attached to the agenda

Conclusions and Outlook

- Working groups and Upgrade Project Office should (or could) ensure coordination and coherence in hardware R&D activities for the upgrade
 - Working groups: activities in the specific domains
 - TUPO: coordination among WGs + system engineering
- Upgrade Project Office
 - Not many meetings so far, good ratio progress/# of meetings
 - Good (or even excellent) response from some groups, but in general there is room for improvement
 - In the first place need to improve reporting to Working Groups
 - Coherence can (and will) be improved to the extent that people are willing to work coherently...
 - Looking forward to making more progress and improve communication over the coming months