

# **Forum on Tracking Detector Mechanics 2017**

Monday 03 July 2017 - Wednesday 05 July 2017

Marseille

## **Book of Abstracts**



# Contents

Radiation length imaging with high resolution telescopes . . . . .	1
Fiber optic-based sensors for relative humidity monitoring in the experiments running at CERN . . . . .	1
Summary on performance of "safety" environmental sensors on the CMS Tracker . . . . .	1
CMS Phase 1 FPIX: Lessons Learned . . . . .	1
Thermal Measurements and FEA of the 2S Module for the CMS Phase-2 Tracker Upgrade . . . . .	1
Quality assurance for CMS Tracker Phase II upgrade 2S modules . . . . .	1
CMS Flat Barrel outer tracker for HL-LHC . . . . .	2
Design and prototyping of the Endcaps for the CMS Tracker Upgrade . . . . .	2
Mechanical concept, design and prototyping of the Silicon Tracking System for the CBM Experiment at FAIR . . . . .	2
Characterization of materials for HL tracker upgrades . . . . .	2
Thermal and tensile strength testing of thermally-conductive adhesives and carbon foam . . . . .	2
SiPM cooling and mechanical support structure of the large area Scintillating Fibre Tracker of LHCb . . . . .	2
Module Design and Cooling Integration for the LHCb VELO Upgrade . . . . .	3
Local supports for the ATLAS ITk strip tracker . . . . .	3
The forward regions of the ATLAS ITk strips detector for the Phase-II Upgrade . . . . .	3
Novel low material-budget detector cooling strategies for inclined modules in silicon tracker detectors . . . . .	3
Alpine stave mechanical proposal for the ATLAS pixel upgrade project . . . . .	3
The Phase-II ATLAS Pixel Tracker Upgrade: Readout for Thermal Characterisation of Prototype Staves . . . . .	3
Thermal QC of ATLAS upgrade forward pixel rings . . . . .	4
Diamond-like Heat Spreaders in the Form of Cheap Synthetic Graphite Tape for Cooling of Instrumentation in Radiation Intense Environments . . . . .	4

Micro-channel cooling INSIDE silicon sensors . . . . .	4
Operational experience from the use of a 90 metre thermosiphon cooling plant for C3F8 evaporative cooling of the ATLAS silicon tracker . . . . .	4
Reduced temperature cooling and heat transfer measurements in C2F6/C3F8 zeotropic blends, and custom ultrasonic instrumentation for blend measurement and leak monitoring into the environmental volumes of the ATLAS silicon tracker . . . . .	4
CO2 superheating and boiling onset measurements in the ATLAS IBL CO2 cooling system	4
Monoblock Approach for a Refrigeration Technical Application (MARTA). Industrial development of Transportable Refrigeration Apparatus for CO2 Investigation (TRACI) . .	5
The LUCASZ CO2 cooling systems at CERN and Cornell University . . . . .	5

38

## **Radiation length imaging with high resolution telescopes**

**Corresponding Author:** ulf.stolzenberg@phys.uni-goettingen.de

39

## **Fiber optic-based sensors for relative humidity monitoring in the experiments running at CERN**

**Corresponding Author:** gaia.maria.berruti@cern.ch

40

## **Summary on performance of "safety" environmental sensors on the CMS Tracker**

**Corresponding Author:** andromachi.tsirou@cern.ch

41

## **CMS Phase 1 FPIX: Lessons Learned**

**Corresponding Author:** stefan.gruenendahl@cern.ch

42

## **Thermal Measurements and FEA of the 2S Module for the CMS Phase-2 Tracker Upgrade**

**Corresponding Author:** max.rauch@cern.ch

43

## **Quality assurance for CMS Tracker Phase II upgrade 2S modules**

**Corresponding Author:** julien.bonnaud@cern.ch

44

### **CMS Flat Barrel outer tracker for HL-LHC**

**Corresponding Author:** cmlei@fnal.gov

45

### **Design and prototyping of the Endcaps for the CMS Tracker Upgrade**

**Corresponding Author:** lumb@ipnl.in2p3.fr

46

### **Mechanical concept, design and prototyping of the Silicon Tracking System for the CBM Experiment at FAIR**

**Corresponding Author:** ol.vasylyev@gsi.de

47

### **Characterization of materials for HL tracker upgrades**

**Corresponding Author:** nicola.pacifico@cern.ch

48

### **Thermal and tensile strength testing of thermally-conductive adhesives and carbon foam**

**Corresponding Author:** chertok@physics.ucdavis.edu

49

### **SiPM cooling and mechanical support structure of the large area Scintillating Fibre Tracker of LHCb**

**Corresponding Author:** robbert.walet@cern.ch

50

**Module Design and Cooling Integration for the LHCb VELO Upgrade****Corresponding Author:** wiktory.byczynski@cern.ch

51

**Local supports for the ATLAS ITk strip tracker****Corresponding Author:** g.beck@qmul.ac.uk

52

**The forward regions of the ATLAS ITk strips detector for the Phase-II Upgrade****Corresponding Authors:** sergio.diez.cornell@cern.ch, jan-hendrik.arling@cern.ch

53

**Novel low material-budget detector cooling strategies for inclined modules in silicon tracker detectors****Corresponding Author:** ruben.gomez.bosch@cern.ch

54

**Alpine stave mechanical proposal for the ATLAS pixel upgrade project****Corresponding Author:** elisabeth.petit@cern.ch

55

**The Phase-II ATLAS Pixel Tracker Upgrade: Readout for Thermal Characterisation of Prototype Staves****Corresponding Author:** abhishek.sharma@cern.ch

56

### **Thermal QC of ATLAS upgrade forward pixel rings**

**Corresponding Author:** nicolas.scharmberg@cern.ch

57

### **Diamond-like Heat Spreaders in the Form of Cheap Synthetic Graphite Tape for Cooling of Instrumentation in Radiation Intense Environments**

**Corresponding Author:** wim.de.boer@kit.edu

58

### **Micro-channel cooling INSIDE silicon sensors**

**Corresponding Author:** miguel-angel.villarejo.bermudez@cern.ch

59

### **Operational experience from the use of a 90 metre thermosiphon cooling plant for C3F8 evaporative cooling of the ATLAS silicon tracker**

**Corresponding Author:** cecilia.rossi@cern.ch

60

### **Reduced temperature cooling and heat transfer measurements in C2F6/C3F8 zeotropic blends, and custom ultrasonic instrumentation for blend measurement and leak monitoring into the environmental volumes of the ATLAS silicon tracker**

**Corresponding Authors:** alexander.madsen@cern.ch, gregory.hallewell@cern.ch

61



**CO<sub>2</sub> superheating and boiling onset measurements in the ATLAS IBL CO<sub>2</sub> cooling system**

62

**Monoblock Approach for a Refrigeration Technical Application (MARTA). Industrial development of Transportable Refrigeration Apparatus for CO<sub>2</sub> Investigation (TRACI)**

**Corresponding Author:** ryszard.kantor@cern.ch

63

**The LUCASZ CO<sub>2</sub> cooling systems at CERN and Cornell University**

**Corresponding Authors:** ylp3@cornell.edu, bart.verlaat@cern.ch