

LIP – Joining Proposal

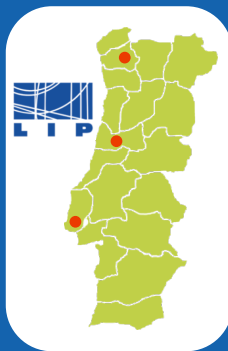




Portuguese ATLAS Team

National group:

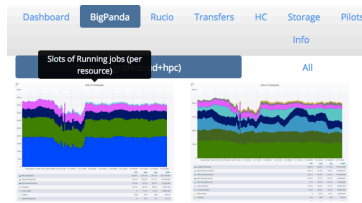
LIP (Lisbon, Coimbra, Minho), IST, FCUL, FCTUC, U. Minho, CFNUL
CEFITEC/UNL, INESC, CFMC, Adl engineer training program



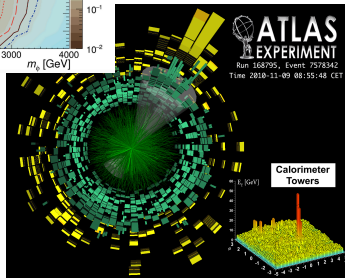
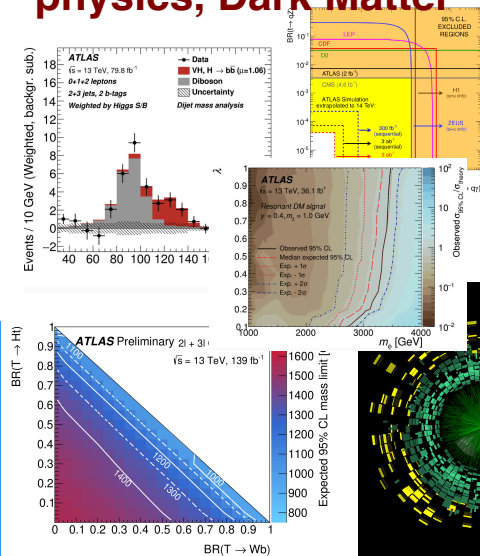
Current Portuguese Contributions to ATLAS

Physics:
Higgs, Vector-Like Quarks, top, heavy ions, forward physics, Dark Matter

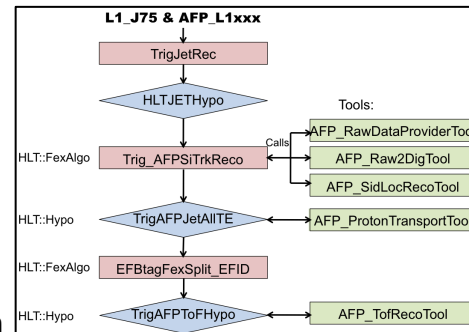
Distributed computing



Iberian Cloud Coordination



Jets HLT

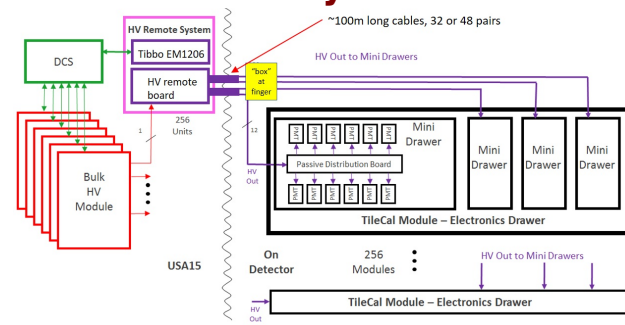


ATLAS Roman Pot DCS and HLT

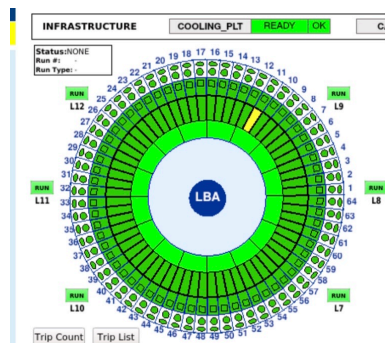


Co-leading ARP DCS

TileCal Upgrade HV distribution system



Leading TileCal DCS



HGTD Involvement: HV Patch Panels

Producing HV patch panels CERN group:

- 16 patch panel boxes located around the calorimeter perimeter
- Routing of High Voltage to HGTD detector
- Filtering out AC noise
- Preliminary layout done and prototype tested
- Contributing to Specifications Review (SPR) document
- Ricardo coordinating Patch Panels (L3)
- Team: 2 engineers, 1 academic




Luís Lopes



Orlando Cunha



Ricardo Gonçalves

	Technical Specification of the High Voltage System		
	<i>ATLAS Project Document</i>	<i>Institute Document No. CERN</i>	<i>Page: 1 of 31</i>
		<i>Modified:</i>	<i>Rev. No.: 1.0</i>

HGTD Electronics:

Specification of the High Voltage System

Abstract

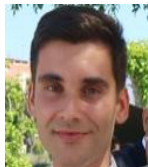
This document describes the specifications for the HGTD HV voltage supply system.

DCS and Interlocks

- HGTD DCS – ongoing work (Filipe):
 - Contributed to DCS Specifications Review document
 - Following SPR panel recommendations working on alternative for data transfer path separate from FELIX
 - Working on High Voltage DCS
- DCS and Interlocks – plans (Rui, Helena):
 - Plan to develop monitoring data transfer through FELIX or alternative solution – Rui
 - Plan to develop design for Interlocks – Helena
 - Helena's commitments imply a small re-scheduling
- Team: 2 engineers, 1 researcher, 1 academic



Filipe Martins



Rui Fernandez




Helena Santos



Ricardo Gonçalo

1 HGTD DCS Requirements Document

2 

3 ATLAS Phase-II Upgrade Project

4 **HGTD DCS and Interlock:**

5 **Requirements Document for HL-LHC**

6 **Abstract**

7 This document describes the specifications for the environmental monitoring, the Detector Control System (DCS), and the Interlock system for the High Granularity Timing Detector (HGTD) to be installed in ATLAS (A Toroidal LHC Apparatus) for Run 4.

8

9

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HGTD DCS Requirements Document		
ATLAS Doc:	AT2-G-ES-0013	
EDMS Id:	2648566	
EDMS Url:	https://edms.cern.ch/document/2648566/1	
Version:	1.0	
Created:	June 2, 2021	
Last modified:	January 12, 2022	
Prepared by:	Checked by:	Approved by:
K. Gritsay, B. Lund-Jensen, S. Malyukov, J. Strandberg, M. Wu	S. Grinstein, F. Martins, P. Teterin, J. Zhang	J. Guimarães da Costa

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Electronics: Altiroc

- Becoming involved in tests of Altiroc v.2
 - In contact with Omega laboratory to install a test setup at LIP
 - Previous experience with Omega ASICs and frontend electronic design & production
 - Serious immediate problem in obtaining a Xilinx board (20 weeks delivery time...)
- Team: 1 engineer
(with support from senior engineer and 2 academics)



Rui Fernandez



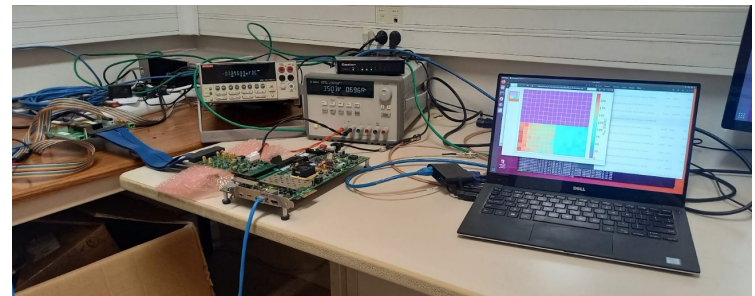
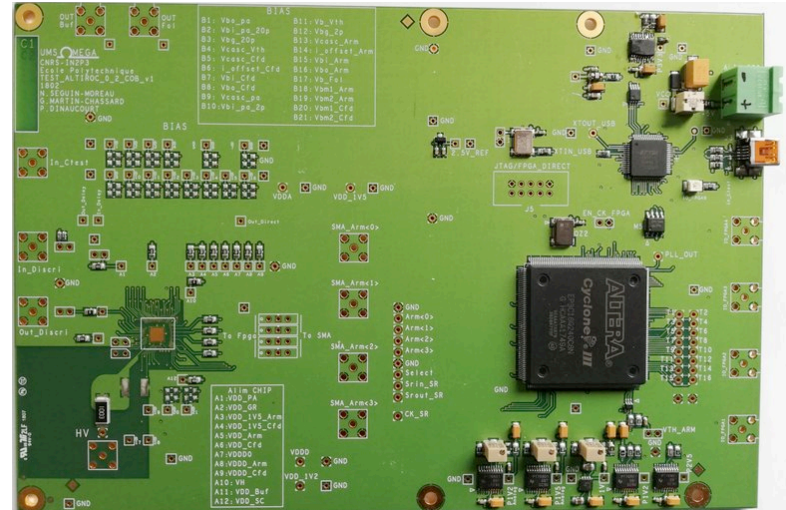
Miguel Ferreira



Pedro Assis



Ricardo Gonalo



HGTD Joining Proposal

- LIP team contributing or proposing to contribute in Electronics and DCS tasks
 - Electronics: HV (patch panels), ASIC (tests)
 - Lumi/DAQ/DCS: DCS and Interlocks
- Team in place: 8 people at various levels, about 2.5 FTE total
 - Expect future engagement from students Qualification Tasks etc
- Expected contribution to CORE costs: ~150 kCHF
 - Details to be firmed up – need change in MoU, to be negotiated with funding agency
 - To move allocated funds from HTT and TDAQ but don't expect any problems
 - Includes Patch Panel production (in-kind contribution) and covering past of outstanding TDAQ funds



Luís Lopes



Orlando Cunha



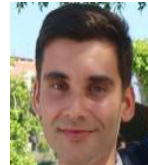
Ricardo Gonçalves



Filipe Martins



Helena Santos



Rui Fernandez



Miguel Ferreira



Pedro Assis

Thanks!



Acknowledgments



REPÚBLICA
PORTUGUESA

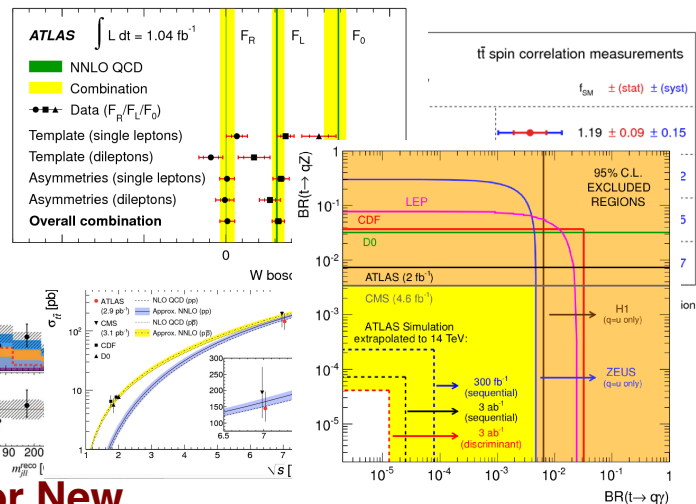
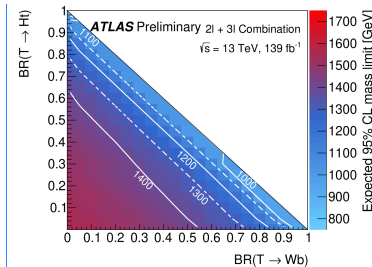
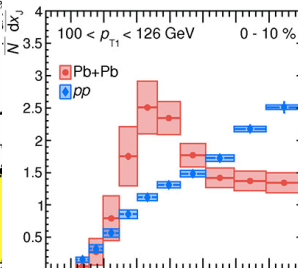
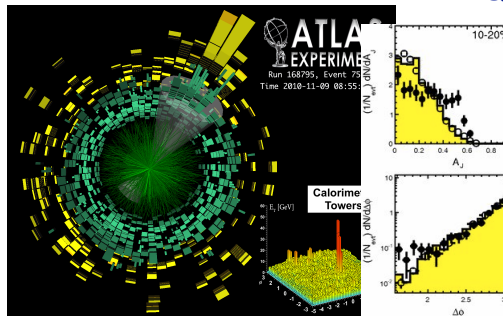
FCT

Fundação
para a Ciência
e a Tecnologia

Backup

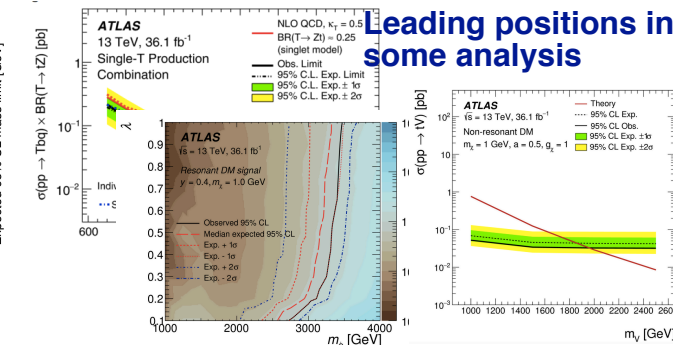
Top properties measurements

**$H \rightarrow WW, H \rightarrow bb, ttH$
Spin/CP properties**



Vector-like quarks, FCNC, dark matter, ...

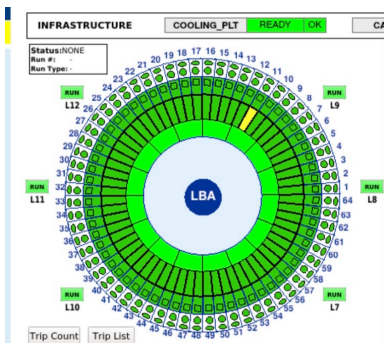
Leading positions in some analysis



Current Portuguese Contributions to ATLAS

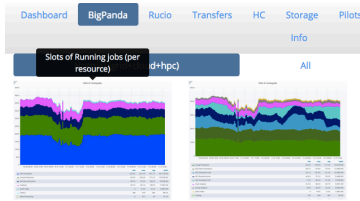
ATLAS Roman Pot DCS and HLT

TileCal Calibration, DCS



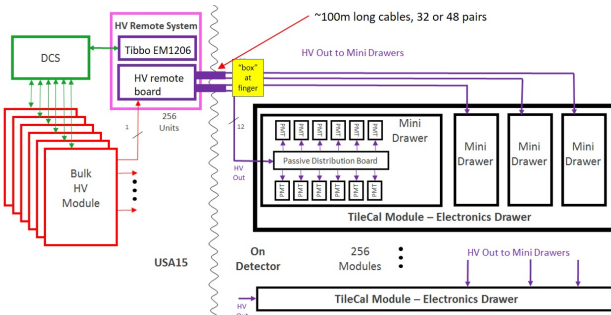
Leading TileCal DCS

Distributed computing

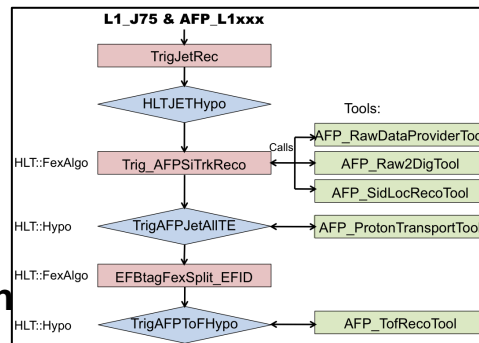


Iberian Cloud Coordination

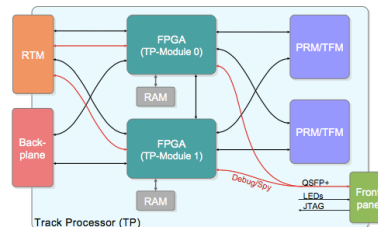
TileCal Upgrade HV distribution system



Jets HLT



Trigger Upgrade: HTT DCS, simulation, mezzanine production



Co-leading ARP DCS

HGTD HV patch panels

