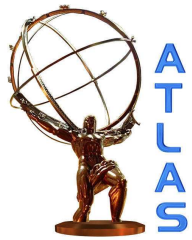
Contributions from Berlin to L1Calo and presentation of the Group

Joint L1 Calo Meeting
23. – 25. March 2011, Cambridge

Martin zur Nedden,
Humboldt-University of Berlin



The HU Berlin Group

Particle Physics in Berlin

- **Member of ATLAS since July 2006**
- **collaboration with DESY, Zeuthen**
  - **Klaus Mönig, Ulrich Husemann, Hermann Kolanoski (retired)**
- **2 independent ATLAS groups at the Institute**
  - **Thomas Lohse: Trigger, Alfa and Top-Physics (EE1)**
  - **Heiko Lacker: SCT Upgrade and 4th generation (EE2)**
  - **Martin zur Nedden: deputy group leader**
  - **close collaboration of the groups**
    - **common meetings**
    - **common analysis software**
    - **separated financing**
- **Close contact to the theory in the institute and at DESY**
  - **Peter Uwer (Phenomenology, HU)**
  - **Sven Moch (Phenomenology, DESY)**
- **Common graduate School with HU Berlin, TU Dresden and DESY, Zeuthen**

Group "EE1"

- **Group leaders:**
  - Thomas Lohse, Martin zur Nedden
- **Postdocs:**
  - in Berlin: Oliver Kind, Andreij Nikiforov,
  - at CERN: Ivana Hristova Antonio Sidoti (left)
- **PhD-Students:**
  - at CERN: Ruth Herrberg,
  - in Berlin: Michelangelo Giorgi, Patrick Rieck (with Theory)
- **Diploma/Master Students:**
  - Carsten Kendziorra, Lukas Heinrich, Umberto Prosperi, Sören Stamm
- recent 3 **Bachelor Students**

Recent ATLAS Activities: Trigger

- Development, implementing and commissioning of the ATLAS Trigger monitoring
  - Trigger Rate Presenter (Antonio Sidoti, Ivana Hristova)
  - Online DQMF and OHP for HLT
  - Trigger Steering Monitoring Software
  - Trigger offline Monitoring for the Tier0 reprocessing
  - Offline DQMF framework (han) for offline Shifter
  - Contributers to Trigger DQ software: Ivana Hristova, Michelangelo Giorgi, Lukas Heinrich, Ruth Herberg, Antonio Sidoti, Martin zur Nedden and **many experts from the Slices**
  - Documentation, tutorials, workshops
  - Coordination of Trigger Monitoring (Martin zur Nedden)
- All systems well in place and commissioned
- Transmitting form a developing phase to stable running and maintaining

Recent ATLAS Activities: Physics

- Object selection for top decays
- Analysis of single top (Oliver Kind)
  - in t-channel
  - in W+t channel
- Introduction of a kinematical fit into the top analysis (Oliver Kind)
  - application to all top analyses
- b-tagging (Martin zur Nedden)
  - calibrations and efficiency studies
  - convenorship of b-tagging Liaison of top-Group
- Search for light charged Higgs Bosons (Martin zur Nedden)
  - in tau (hadronic) + lepton channel in ttbar production
  - in collaboration with TU Dresden

Other / Former Activities

- Member of HERA-B up to the end
  - Responsible for second level trigger
  - b-production and J/ψ suppression in matter
- Astroparticle Physics (Thomas Lohse)
  - Member of H.E.S.S.
  - New participation at CTA
- Further ATLAS activities
  - Building of ALFA supporting structures in Berlin

Plans of HU Berlin for L1Calo

Plans for L1 Calo: Background

- Discussions with TDAQ Management in September 2010:
  - HU Berlin whishes to share an upgrade project for the phase 1 luminosity upgrade now
  - There are no possibilities in Berlin for hardware contributions
  - Contribution to L1Calo with focus to simulation
  - Collaboration with U Mainz anticipated
  - We will bring in our experience from monitoring
- Persons
  - Ivana Hristova (at CERN) and Andreij Nikiforov with 0.5 FTE each
  - Thomas Lohse, Martin zur Nedden (Group leaders)
- Discussions taken place
  - One full day meeting in Mainz in November with all involved persons in Mainz
  - Phone Meeting with Steve Hillier in December 2010 an in person at February 2011 at CERN

Possible Fields of Activities

- **Development of algorithms for topological processor**
  - Extended, deep studies of all possible topologies
  - Study also for higher luminosities
  - Study with real pileup events, test time consumption
  - Development of a framework and first studies started by **Anreij Nikiforov**
- **Simulation software within Athena**
  - Understanding the interface between Athena and the simulation code
  - Prepare algorithms for topological processor to be transferred to VHDL
- **Sample preparation**
  - High multiplicity minimum bias sample needed: special trigger
- **Hardware tests at CERN**
  - Get involved in hardware activities for tests as soon hardware modules are available and tested at CERN
- **L1 Calo Monitoring**
  - allready started by **Ivana Hristova**

L1 Calo Monitoring: Status and Plans

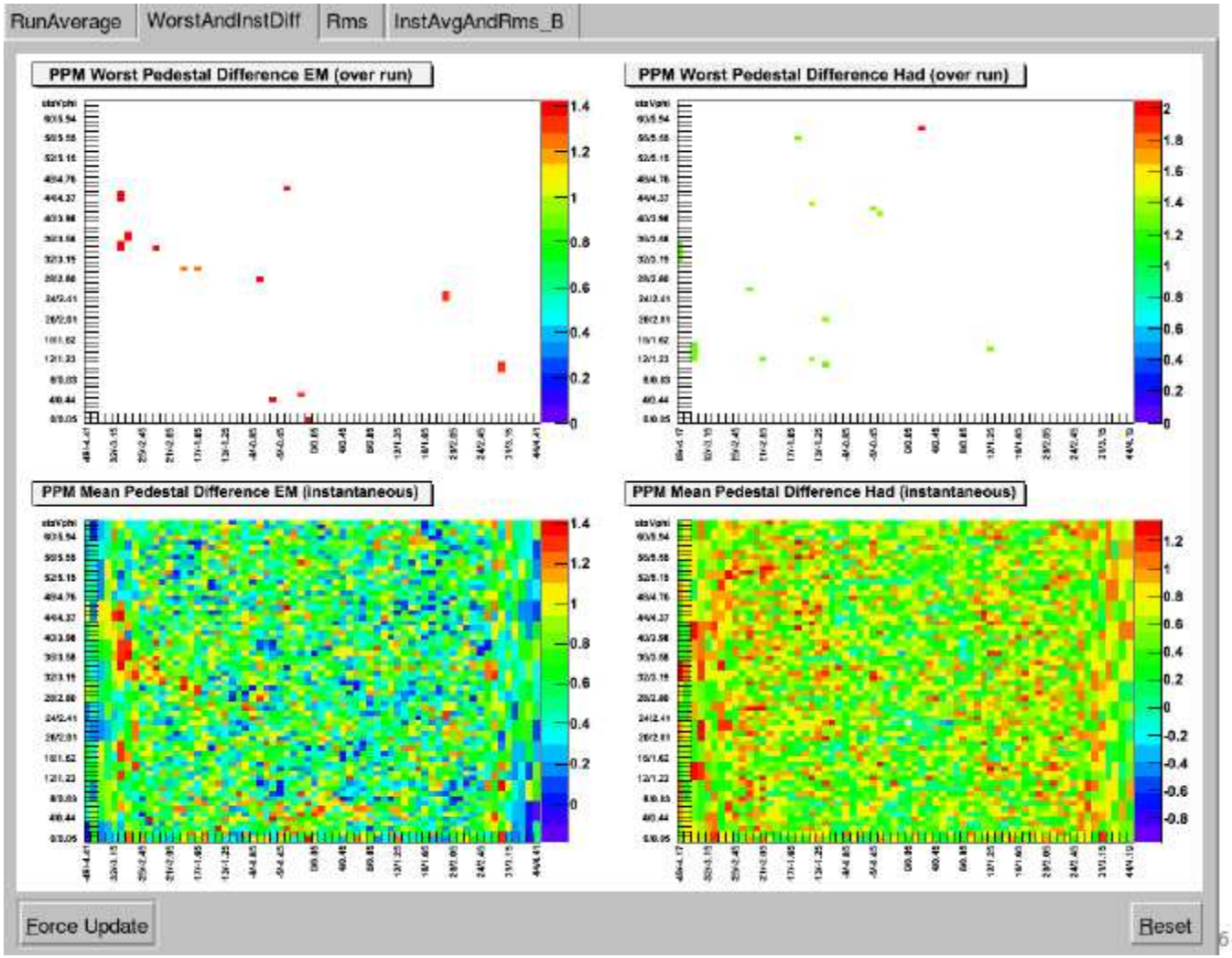
Overview of L1Calo Monitoring

- Provide relevant information to shifters and experts
- Based on Athena, can be used also offline
- Scope of the work
  - Keep track of Athena releases at P1
  - Updates for L1Calo monitoring software (svn, OKS, OHP)
  - Test changes in L1Calo standalone partition
  - Keep documentations up to date
- Maintenance and development:
  - L1 calo monitoring in good shape in 2010
  - L1Calo monitoring packages updated according to changes in simulation
  - New and/or modified histograms are implemented in OHP and DQMF

Contributions form HU Berlin

- Contribute to the ongoing L1Calo operation and monitoring work
- Participate in daily activities
- Tasks since January 2011 (Ivana shadowed Taylor Childers)
  - Install up-to-date packages and releases at P1
  - adjust athenaPT OKS configuration to new Athena setup, update OKS
  - test and deploy changes at P1
  - update of documentations
- Next projects
  - introduce PPM ADC pedestal histogram into OHP and DQMF
  - update threshold values of PPM LUT η/φ maps for high lumi

L1Calo OHP Pannel for PPM Pedestal



cells with largest deviation from mean pedestal value in η/φ regions

check of pedestal drift can be automated by inserting into DQMF

also pedestal drift per channel can be monitored