HK 15: Instrumentation IV

Zeit: Montag 16:30–18:15 Raum: HS 12

Gruppenbericht HK 15.1 Mo 16:30 HS 12

Status of the mCBM@SIS18 experiment at GSI/FAIR — •Christian Sturm for the CBM-Collaboration — GSI Helmholtzzentrum für Schwerionenforschung GmbH

The Compressed Baryonic Matter experiment (CBM) at FAIR is consequently designed to measure nucleus-nucleus collisions at unprecedented interaction rates up to 10 MHz which will allow to study extremely rare probes with high precision. To achieve this high rate capability CBM will be equipped with fast and radiation hard detectors, readout by a free-streaming data acquisition system transporting data with up to 2 TB/s to a large scale computer farm which provides first level event selection. With *mCBM@SIS18* ("mini-CBM") we are presently commissioning a CBM full-system test-setup at GSI/FAIR comprising final prototypes and pre-series components of all CBM detector subsystems and their read-out systems. The primary aim is to develop, commission and optimize (i) the free-streaming data acquisition system including the data transport to a high performance computer farm inside the GreenITCube, (ii) the online track and event reconstruction and event selection algorithms and (iii) the offline data analysis as well as the controls software package. Furthermore, the setup offers additional high-rate tests of the final detector prototypes in nucleus-nucleus collisions under realistic experiment conditions. An overview on the *mCBM@SIS18* project incl. first results from the commissioning runs will be given.

Supported by BMBF and GSI/FAIR.

HK 15.2 Mo 17:00 HS 12

Das Optimierungsframework Geneva in der Physik — •Jannis Geuppert[1], Kilian Schwarz[1], Jan Knedlik[1], Matthias Lutz[1] und Rüdiger Berlich[2] — [1]GSI Helmholtzzentrum für Schwerionenforschung GmbH, Planckstraße 1, 64291 Darmstadt — [2]Gemfony scientific UG, Hauptstraße 2, 76344 Eggenstein-Leopoldshafen

Das Optimierungsframework Geneva wird nach mehreren Jahren weiterhin bei GSI erfolgreich zur parametrischen Optimierung technischer und wissenschaftlicher Fragestellungen auf Clustern sowie lokalen parallelen Recheneinheiten eingesetzt. Im Vortrag werden ein Überblick über die Funktionen und Anwendungsbereiche von Geneva gegeben, bereits mit Geneva durchgeführte Projekte präsentiert sowie wichtige vollzogene Änderungen diskutiert. Dazu gehört der Umstieg zu Beast-Websockets sowie die Implementierung der Speicherung von bereits durchgeführten Optimierungs-Iterationen in Kontrollpunkten, um diese nach Bedarf an anderer Stelle fortsetzen zu können. Ferner wurde die Kompatibilität mit neueren Compiler-Versionen erzielt und damit begonnen als zusätzlichen Optimierungalgorithmus den parallele Nelder-Mead-Simplex-Algorithmus in Geneva zu implementieren.

HK 15.3 Mo 17:15 HS 12

ALICE Tier 2 Centre and ALICE Analysis Facility prototype at GSI — •Sören Fleischer, Raffaele Grosso, Jan Knedlik, Paul-Niklas Kramp, and Kilian Schwarz for the ALICE-Collaboration — GSI, Darmstadt, Deutschland

Since 2004 GSI has been operating a Tier 2 Center for the ALICE experiment on the local shared computing cluster, currently located in the Green IT Cube. In this contribution we describe the current status of the center and important changes within the past year, including improvements in the high-level monitoring of ALICE Grid (AliEn) jobs and further virtualisation of XRootD redirectors. In parallel, a working prototype of an ALICE Analysis Facility (AF) has been set up at GSI. The effectiveness of XRootD plug-ins developed at GSI is presented. The RedirLocal plug-in allows local clients to directly access files on the local file system, bypassing the XRootD data servers and thus making local data access faster and more scalable compared to using default Grid methods. The SymLink plug-in allows local clients to access local files by their logical name as available on the AliEn File Catalogue, without accessing the latter. Performance tests using standard ALICE analysis trains running on the current test setup suggest that the target data throughput of 100 GB/s for an ALICE Analysis Facility will be achievable. Furthermore, the ALICE AF prototype has allowed to successfully test the usage within AliEn jobs of the Dynamic Deployment System (DDS), a toolset for effective deployment of distributed processes, developed at GSI.

HK 15.4 Mo 17:30 HS 12

Control system developments and machine model benchmark for the GSI fragment separator FRS — •Jan-Paul Hucka[1], Joachim Enders[1], Stephane Pietri[2], Helmut Weick[2], David Ondreka[2], Jutta Fitzek[2], and Bernd Schlei[2] — [1]TU Darmstadt — [2]GSI Helmholtzzentrum

At the GSI facility, the LSA [1] framework from CERN is used to implement a new control system for accelerators and beam transfers.

This was already completed and tested for the SIS18 accelerator. The implementation of experimental rings such as CRYRING and ESR is currently under development. In addition, the fragment separator FRS [2] and - at a later stage - also the superconducting fragment separator Super-FRS at FAIR will be controlled within this framework.

The challenge posed by the implementation of the control system for the FRS arises from the interaction of the beam with matter in the beamline and the beam's associated energy loss. This energy loss is determined using input from ATIMA [3] and has been included into the code of the LSA framework. The developed control system solutions were tested in dry-runs and proven to control power supplies and actuators with the help of an out of framework solution.

Additionally the current production version of the software and setting generator was simulated and benchmarked by comparison to older measurements.

[1] M. Lamont et al., LHC Project Note 368 [2] H. Geissel et al., NIM B 70, 286 (1992) [3] H. Weick et al., NIM B 164/165 (2000) 168

Supported by BMBF (05P15RDFN1 and 05P19RDFN1).

HK 15.5 Mo 17:45 HS 12

Status of MRPC calibrations for the endcap-time-of-flight upgrade of STAR — •Philipp Weidenkaff for the CBM-Collaboration — Ruprecht-Karls-Universität Heidelberg

As part of the FAIR phase 0 program, CBM-ToF MRPC modules have been installed as endcap-time-of-flight detectors in STAR for the upcoming beam-energy-scan II. These detectors will provide a major improvement to the particle identification capability of the experiment in the forward region ($1.0 < \eta < 1.5$), which is especially necessary for the planned fixed target program. A parallelized calibration scheme for the MRPC detectors has been developed inside the StROOT framework. Current status of this calibration scheme and the detector performance in the 2018 test runs will be presented in this talk.

The project is partially founded by BMBF 05P15VHFC1.

HK 15.6 Mo 18:00 HS 12

Characterization of the Strip Front-End ASIC of the PANDA MVD with the JDRS — •Alessandra Lai[1], Tobias Stockmanns[1], James Ritman[1], Daniela Calvo[2], and Kai-Thomas Brinkmann[3] for the PANDA-Collaboration — [1]Forschungszentrum Jülich — [2]INFN Torino — [3]Uni Gießen

The Micro Vertex Detector (MVD), the innermost subsystem of the PANDA detector, plays an essential role in the event reconstruction. The requirements of the experiment lead to the development of custom front-end chips for the MVD pixel and strip sensors. The Jülich Digital Readout System (JDRS) is the data acquisition system designed to evaluate the performance of the prototypes of these front-end ASICs through measurements in the laboratory and under ionizing particle beams. The recent improvements on the JDRS will be presented, together with the results of the tests carried out on the first prototype of the strip front-end ASIC PASTA.