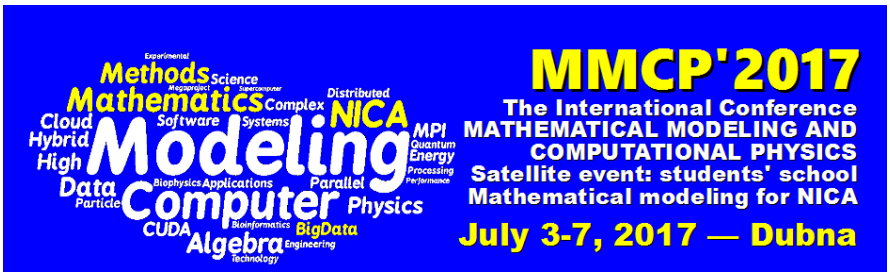

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Development of the geometry database for the CBM experiment

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The CBM (Compressed Baryonic Matter) experimental facility that is being built at GSI (Darmstadt, Germany) at the accelerator complex of antiprotons and heavy ions FAIR (Facility for Antiproton and Ion Research) is intended for studying the properties of superdense baryonic matter generating in 2-45 GeV/nucleon proton-nuclear and nucleus-nucleus collisions [1].
At the current moment, the CBM collaboration moves from the stage of prototypes research and tests to the detectors and their components production. A high level control for the manufacturing process is required because of the complexity and high price of the detector components.
As a result, there is a need for the development of a database complex for the CBM experiment. In the paper [2] we briefly discussed a complex of Database Management Systems (DBMS) for the CBM collaboration and described a current status of its implementation. The DBMS structure was developed on the basis of databases usage at LHC and other high energy physics experiments [2].
Here we present the current state of developments of the Geometry DB (Geometry Database) for the CBM experiment. The Geometry DB supports the CBM geometry, which describes the CBM experimental setup at the detail level required for simulation of particles transport through the setup using GEANT3 [3].
On the basis of the requirements the Geometry Database [4] has been developed in frameworks of the PostgreSQL and SQLite DBMS. The main purpose of this database is to provide convenient tools for: 1) managing the geometry modules (MVD, STS, RICH, TRD, RPC, ECAL, PSD, Magnet, Beam Pipe); 2) assembling various versions of the CBM setup as a combination of geometry modules and additional files (Field, Materials); 3) providing support of various versions of the CBM setup. The CBM users of the Geometry Database may use both GUI (Graphical User Interface) and API (Application Programming Interface) tools for working with it.

1. Friman B. et al. Compressed Baryonic Matter in Laboratory Experiments // The CBM Physics Book—2011.
2. E.P. Akishina, E.I. Alexandrov, I.N. Alexandrov, I.A. Filozova, V. Friese, V.V. Ivanov: Conceptual Consideration for CBM Databases, Communication of JINR, E10-2014-103, Dubna, 2014.
3. GEANT - Detector Description and Simulation Tool, CERN Program Library, Long Write-up, W5013 (1995).
4. User Requirements Document of the Geometry Database for the CBM experiment http://lt-jds.jinr.ru/record/69336?ln=en

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