ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE
EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
Laboratoire Européen pour la Physique des Particules
European Laboratory for Particle Physics

ATLAS EXPERIMENT

Report on the presentation of the Master Degree Dissertation by Nikoloz TSUTSKIRIDZE (Technical University of Georgia) on

Development of Geometrical Descriptions of the Magnet Systems of the ATLAS Detector for the Simulation and Reconstruction Software Packages

The undersigned attended Nikoloz Tsutskiridze's presentation at CERN on 6 June 2012 and examined the distributed summary in English of the Master Dissertation. The dissertation consists of six main sections:

1. Introduction describing the size and technical challenges presented by the development and construction of current-generation experiments for High-Energy and Nuclear Physics;
2. General description of the ATLAS detector;
3. Engineering challenges of the ATLAS experiment and of its geometrical description;
4. Extraction of the detailed geometrical description of the ATLAS toroidal magnet system from CAD models, conversion and integration in CATIA, and comparison with the geometry description used by ATLAS so far and implemented in GeoModel and Geant4;
5. Simplification of the CATIA geometry description, checks of volume overlaps and gaps, production of the improved (closer to reality) Geant4 description;
6. Conclusions.

The bulk of Nikoloz Tsutskiridze's own work is described in sections 4 and 5. He showed in his presentation and in the discussion that he has a very good understanding of the problems he had to solve, of the methodology to be applied and of the solutions he found. During this project several conversion tools between different CAD descriptions had to be developed or adapted in order to achieve the required precision. This work is very useful for the improvement of the geometrical description of the ATLAS detector used by simulation and reconstruction programs.

We consider Nikoloz Tsutskiridze's work of the highest quality and wish him a successful career in computational engineering after the completion of his education.

Geneva, 7 June 2012

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