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The simulation for the ATLAS experiment: present status and outlook

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The simulation for the ATLAS experiment is presently operational in a full OO environment and it is presented here in terms of successful solutions to problems dealing with application in a wide community using a common framework. The ATLAS experiment is the perfect scenario where to test all applications able to satisfy the different needs of a big community. Following a well stated strategy of transition from the GEANT3 to the GEANT4-based simulation, a good validation programme during the last months confirmed the characteristics of reliability, performance and robustness of this new tool in comparison with the results of the previous simulation. Generation, simulation and digitization steps on different full sets of physics events were tested in terms of performance and robustness in comparisons with the same samples undergoing the old GEANT3-based simulation. The simulation program is simultaneously tested on all different testbeam setups characterizing the R&D programme of all subsystems belonging to the ATLAS detector with comparison to real data in order to validate the physics content and the reliability in the detector description of each component.

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