6. Michał Mazurek: **New simulation software technologies at the LHCb Experiment at CERN**

The LHCb Experiment at the Large Hadron Collider at CERN has successfully performed a large number of physics measurements during Runs 1 and 2 of the LHC. Monte Carlo simulation is key to the interpretation of these and future measurements. The LHCb Experiment is currently installing a major detector upgrade for Run 3 of the LHC to process events with five times higher luminosity. New simulation software technologies have to be introduced to produce simulated data samples of sufficient size within the computing resources allocated for the next few years. Therefore, the LHCb collaboration is currently preparing a new version of its Gauss simulation framework. The new version provides the LHCb specific functionality while its generic simulation infrastructure has been encapsulated in an experiment independent framework, Gaussino. The latter combines the Gaudi core software framework and the Geant4 simulation toolkit and fully exploits their multithreading capabilities. A prototype of a fast simulation interface to the simulation toolkit is being developed as the last addition to Gaussino to provide an extensive palette of fast simulation models, including new deep-learning-based options.