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GenEx - a modular software framework of MC event generator for exclusive processes

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Central Exclusive Production (CEP) is a class of diffractional processes studied at the Large Hadron Collider, that offers a very clean experimental environment for probing the low energy regime of Quantum Chromodynamics.
As any other analyses in High Energy Physics, it requires a large amount of simulated Monte Carlo data, that is usually created by means of the so-called MC event generators. In most cases, a general-purpose applications (e.g. Pythia8) are enough, but in specialized areas of study, where phenomenological models are used they tend to be cumbersome.
GenEx is a simple class structure for construction of a Monte Carlo event generators, that is able to self-adapt to the provided matrix element and acceptance cuts. Based on that a new Monte Carlo event generator for CEP has been introduced to the LHCb experiment framework with a standalone version available.
Written in C++, it is aimed at replacing the older generation of FORTRAN based generators with a lightweight and modern package. The key idea is to provide the community with a user-friendly and effective way of testing new models and generating Monte Carlo samples. Standalone version relies heavily on the programming techniques established in the recent years such as concurrent computing.
The presentation will describe the general package structure and various issues related to the implementation of new exclusive physics models. In addition, a generator-level production optimization and the performance test results for generation on many threads and comparison with other existing generators will also be presented. We believe it is a valuable complement for CEP physics to the big, general-purpose generators available at the market.

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