Contribution ID: 7

Type: not specified

## Monte Carlo generators based on GPUs

Tuesday 19 February 2013 14:00 (40 minutes)

Monte Carlo-based particle generators widely used in particle and detector simulations require enormous number of Central Processing Units (CPU) and huge calculational time. Using a faster computing method might give a unique capability for collaborations to speed up their data analysis or simulations. Recently, programming frameworks of fast General Purpose Graphical Processing Units (GPGPU) reached the level to optimize some programming sub-processes running on GPUs. This is a challenging task, but might result 10 – 100 times faster calculation – theoretically.

As a first step on this way, an inclusion of a GPU implemented pseudo-random generators (PRNG) into a Monte Carlo-based particle generator (MC) is presented here. We performed the diehard-algorithms tests of PRNGs: a Mersenne –Twister-based PRNG on CPU, a SIMD-oriented Mersenne –Twister PRNG on GPU, and a linear-congruent MWC64X PRNG on GPU. Comparison of PRNGs were done within the AliROOT MC generator framework for both by CPU and GPU runs. Hadron production in proton-proton (pp) and lead-lead (PbPb) collisions were generated

using GPU generated numbers.

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