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High performance computing system in the framework of the Higgs boson studies

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The Higgs boson physics is one of the most important and promising fields of study in the modern high energy physics. It is important to notice, that GRID computing resources become strictly limited due to increasing amount of statistics, required for physics analyses and unprecedented LHC performance. One of the possibilities to address the shortfall of computing resources is the usage of computer institutes' clusters, commercial computing resources and supercomputers. To perform precision measurements of the Higgs boson properties in these realities, it is also highly required to have effective instruments to simulate kinematic distributions of signal events. In this talk we give a brief description of the modern distribution reconstruction method called Morphing and perform few efficiency tests to demonstrate its potential. These studies have been performed on the WLCG and Kurchatov Institute's Data Processing Center, including Tier-1 GRID site and supercomputer as well. We also analyze the CPU efficiency during these studies for different computing facilities. Reviewed approach demonstrates high efficiency and stability of the Kurchatov Institute's Data Processing Center in the field of the Higgs boson physics studies.

Primary authors: Dr KLIMENTOV, Alexei (Brookhaven National Lab); Mr KRASNOPEVTSEV, Dimitrii (National Research Nuclear University MEPhI (RU)); RYABINKIN, Eygene (NRC "Kurchatov Institute"); Mr PROKOFIEV, Kirill (HKUST); Mr BELYAEV, Nikita (NRC "Kurchatov Institute"); Mr KONOPLICH, Rostislav (NYU); Dr VELIKHOV, vasily (NRC "Kurchatov Institute")

Presenter: Mr BELYAEV, Nikita (NRC "Kurchatov Institute")

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