Contribution ID: **16** Type: **Talk**

Green software in HEP: benchmarks and studies on MC generators

Wednesday 7 May 2025 09:40 (20 minutes)

In this talk, we will describe the studies undertaken at the University of Manchester to estimate and improve the energy efficiency of computing hardware and software used by students and researchers.

The goal of these studies is to build an understanding of the environmental impact of paticle physics research focusing on two fronts:
1) the carbon cost of the hardware uses for high power computing hardware and the local computing cluster
2) the energy efficiency of data analysis software and machine learning models in "big data"-related scientific fields including as high-energy particle physics.

The focus of this contribution will be the energy efficiency of scientific software algorithms and MC generation packages, taking Herwig, ML data compression and top tagging algorithms as examples. We will discuss different tools and benchmarks and review their methodologies.

We will then describe our plans towards a lifecycle analysis for computing hardware, and work undergoing to estimate the power consumption of our local cluster more precisely.

Requested talk length

15

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