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# Calorimetric simulation with quantum computers: the energy perspective

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During the HL-LHC era the WLCG, according to the current estimates, will be requested to provide millions of CPU years of computation annually. The largest single computing loads are particle tracking, hard scatter event generation and calorimetry simulation. Improving the computational performance of these loads is a very active research area that includes creation of GPU based codes and algorithms, applications of AI and to some extent the application of quantum computing (QC). There have been some recent advancements in the area of application of QC to simulation of particle showers in calorimeters. We conduct a first examination of energy cost of conducting calorimetry simulations using traditional approaches, AI-based approaches deployed on GPUs and QC-based approaches.

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