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Wednesday, December 4, 14:00-16:00
Lecture Room A, Department of Physics, via Valerio 2 - Trieste

Quantum Computing for High Energy Physics Applications

With the commissioning of the upgraded LHC-HL machine, High Energy Physics will face a large shortage of computing resources that has been evaluated between a factor 10 and 100. It is therefore necessary to explore all avenues that can lead to an improvement of the performance of HEP software. Quantum Computing has the potential to offer unprecedented performances, but at the price of a fundamental rethinking of our algorithms and, to an extent, computing model. This talk will first introduce the principles of Quantum Computing. It will then present some possible avenues to exploit Quantum Computing for High Energy Physics research and will expand on the projects currently under way or in preparation in connection with the HEP physicist and the major technology providers. In particular we will expand on the areas where we see the greatest potential for “Quantum Dominance” and we will consider what could be the impact of Quantum Computing on the HEP computing model. We will also point out what are the possible usage outside the realm of HEP of the proposed techniques and applications.

Organizzazione a cura di: A. Bassi (UniTs & INFN)



Istituto Nazionale di Fisica Nucleare
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