Contribution ID: **7**   Type: **not specified**

Computing challenges at the HL-LHC

Wednesday 13 September 2023 15:00 (45 minutes)

As the Large Hadron Collider (LHC) program steps into the exascale epoch, a luminosity upgrade is scheduled for 2029 (HL-LHC), which will yield an estimated exabyte of data annually from each detector. This significant escalation in data volume and complexity heralds an unparalleled computational challenge. In anticipation of this imminent landscape, the LHC experiments have initiated an ambitious research and development (R&D) campaign.

Concurrently, the sphere of computing is experiencing multiple transformative technological shifts, including the advent of exascale technologies, the proliferation of accelerated heterogeneous hardware, the burgeoning AI/Machine Learning revolution intertwined with the convergence of AI and High Performance Computing (HPC), and the environmentally crucial green revolution, which emphasizes the reduction of carbon footprint and enhancement of efficiency.

For the past two decades, CERN openlab has been instrumental in harnessing such technology revolutions, forming symbiotic relationships with industry partners, thereby reinforcing its unique capacity to instigate innovative R&D. This presentation will delve into the preparatory computational work for the HL-LHC and the research domains being explored through collaborations with industry counterparts.

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Session Classification: Keynote