Irfu
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Séminaire DPhP

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CEA-Saclay Bât. 141, salle André Berthelot

New approaches to high-level particle physics analysis

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Particle physics has, for the last 50 or so years, led the world in making statistical inferences from large datasets.
We have produced tools like ROOT, whose I/O and reflection libraries were well ahead of their time, and of course the World Wide Web.
However, the rest of the world has now overtaken us in terms of data quantities, processing power, and human investment.
Furthermore, the break down in Moore's Law coupled with the huge increases in datasets from projects like the HL-LHC, DUNE, or the Square Kilometer Array pose significant challenges to our current analysis computing model.
This seminar will make the case that computing for particle physics analysis is undergoing a phase transition to rethink the way we undertake high-level analysis within our experiments and to make better use of tools developed outside of HEP.
I will summarize community efforts to increase our support for the Python programming language, the development of the "columnar analysis" approach, and efforts to build an "analysis description language".
As a bonus these approaches offer improved analysis reproducibility, reduced learning times, and better support for machine learning techniques.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : `martine.oger@cea.fr`.