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Particle Physics at LPTHE

Vendredi 27 Novembre 2020, 14 :00
LPTHE, zoom room https ://zoom.us/j/99498193834(Please use the following zoom link to connect : https ://zoom.us/j/99498193834)
Domaines : hep-ph

Titre : *Simulating LHC events with generative networks*

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Résumé : *Over the next years, measurements at the LHC and the HL-LHC will provide us with a wealth of data. The best hope of answering fundamental questions like the nature of dark matter, is to adopt big data techniques in analyses and simulations to extract all relevant information. At the analysis level, machine learning methods have already shown impressive performance boosts in many areas like top tagging, jet calibration or particle identification. On the theory side, LHC physics crucially relies on our ability to simulate events efficiently from first principles. In the coming LHC runs, these simulations will face unprecedented precision requirements to match the experimental accuracy. Innovative ML techniques like generative models can help us overcome limitations from the high dimensionality of the parameter space. Such networks can be employed within established simulation tools or as part of a new framework. Since neural networks can be inverted, they also open new avenues in LHC analyses.*