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AtlFast3: Fast Simulation in ATLAS for Run 3 and beyond

Monday 24 October 2022 11:00 (30 minutes)

AtlFast3 is the next generation of high precision fast simulation in ATLAS that is being deployed by the collaboration and was successfully used for the simulation of 7 billion events in Run 2 data taking conditions. AtlFast3 combines a parametrization-based approach known as FastCaloSimV2 and a machine-learning based tool that exploits Generative Adversarial Networks (FastCaloGAN) for the simulation of hadrons.

For the purpose of Run 3, the parametrization of AtlFast3 was fully reworked and many active developments are ongoing to further enhance the quality of fast simulation in ATLAS. This talk will give a brief overview of AtlFast3 with focus on FastCaloSimV2 and outline several improvements with respect to the previous simulator tool AFII. Furthermore, recent advancements in the parametrised simulation, such as the development of a dedicated tune of electromagnetic shower shapes to data are presented.

Significance

The talk will give an overview of recent developments of fast simulation in ATLAS that play a crucial role in achieving the collaborations computing goals. Novel developments such as the tuning of EM shower shapes to data are presented.

References

https://link.springer.com/article/10.1007/s41781-021-00079-7

Experiment context, if any

ATLAS

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