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## AtFast3: The next generation of fast simulation in ATLAS

*Tuesday 30 November 2021 18:00 (20 minutes)*

AtFast3 is the next generation of high precision fast simulation in ATLAS. It is being deployed by the collaboration and will replace AtFastII, the fast simulation tool that was successfully used until now. AtFast3 combines two Fast Calorimeter Simulations tools; a parameterization-based approach and a machine-learning based tool exploiting Generative Adversarial Networks (GANs). AtFast3 provides improved agreement with Geant4 for objects used in analyses, with a focus on those that were poorly modelled in AtFastII. In particular, the simulation of jets of particles reconstructed with large radii and the detailed description of their substructure, are significantly improved in AtFast3. The modelling and performance are evaluated on events produced at 13 TeV centre-of-mass energy in the Run-2 data-taking conditions.

### Significance

### References

<https://arxiv.org/abs/2109.02551>

### Speaker time zone

Compatible with Europe

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**Session Classification:** Track 2: Data Analysis - Algorithms and Tools

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