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【354】Mitigating experimental challenges in using pileup for physics

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Pileup, or the presence of multiple independent proton-proton collisions within the same bunch-crossing, is critical to the production of enormous datasets at the LHC. However, the typical LHC physics analysis only considers a single collision in each bunch crossing; the pileup collisions are viewed as an annoyance to be rejected. By reconstructing these pileup collisions, it is possible to access an enormous dataset of hadronic physics processes.

In this contribution, we detail some experimental challenges associated with the pileup dataset as recorded by the ATLAS Detector. Examples include selection biases and the treatment of physics objects that overlap in the detector, but which originate from different proton-proton collisions.

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