

Neural Solutions to Synthetic Data Generation - ATLAS - CERN

Neural-based Compression of ATLAS Synthetic Data DESY : Stephen Jiggins Contact Info: <u>stephen.jiggins@desy.de</u>

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Neural Importance Sampling

• Multiple stages to Monte Carlo simulation



Neural Importance Sampling



• Neural Likelihood Ratio Importance Sampling

- Only simulate the first step, and then transform data into target distributions using **importance weights**
- Reduce disk usage by ~50-66%



Source: CARL Athena [T.Procter, S.Jiggins, et al]



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