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Ultra-fast muon tomography simulations using Adversarial Neural Networks

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This presentation explores the possibility of using Generative Adversarial Neural Networks (GANN) in order to simulate the propagation of muons through material without using a complete simulation of the physical processes. In order to achieve this goal, Generative Adversarial Neural Networks have been used to simulate muon tomography data applied to the measurement of the thicknes of isolated pipes. The GANNs have shown an excellent ability to reproduce the scattering distributions, even when the thickness of the pipe is provided as a conditional parameter to the network. Studies on the interpolation ability of the network have been also conducted, being very successfull.

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