

# Pixel Detector Background Generation using Generative Adversarial Networks at Belle II

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The pixel detector (PXD) is an essential part of the Belle II detector recording particle positions. Data from the PXD and other sensors allow us to reconstruct particle tracks and decay vertices. The effect of background noise on track reconstruction for measured data is emulated for simulated data by a mixture of measured background noise and easily-simulated particle decays. This model requires a large set of statistically independent PXD background noise samples in order to avoid the systematic bias of reconstructed tracks. However, data from the fine-grained PXD requires a substantial amount of storage. As an efficient way of producing background noise, we explore the idea of an on-demand PXD background generator using Generative Adversarial Networks (GANs).

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