Title: Simulation of noise in the Belle II strip vertex detector

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Abstract: This bachelor thesis describes the development of strip noise simulation for the Belle II strip vertex detector (SVD). The overview part of the thesis describes the Belle II experiment and its detector system. The next part summarizes the basic principles of semiconductor detectors with a focus on electronic noise. This section is followed by a more detailed description of Belle II SVD, its noise characteristics and simulation methods. The methods part introduces basic concepts of noise simulation using machine learning methods, in particular, artificial neural networks. The experimental part describes the development and implementation of a production noise generator, and discusses the performance, precision, and alternative solutions.

Keywords: particle physics, Belle II, strip detector, noise, simulation, neural network