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K-Long Identification Efficiency of the KLM Detector in the Belle II Experiment Using sPlot

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Cover Page Footnote

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ABSTRACT

Long-lived neutral kaon mesons (neutral K-longs) are identified by energy deposits in the KLM detector of the Belle II experiment. However, various other particles can also deposit energy in the KLM detector. A statistical method known as sPlot can be utilized to distinguish between the energy deposit patterns of neutral K-longs vs. other backgrounds. This technique, currently developed with Monte-Carlo events, allows for a more robust determination of K-long identification efficiency in the KLM detector, which can eventually be applied on real data.

KEYWORDS: Belle II, KLM Detector, sPlot, K-long

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