

# Characterization of SiPMs at TRIUMF

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Silicon Photo-Multipliers (SiPMs) have emerged as a compelling photo-sensor solution. In contrast to the widely used Photo-Multipliers Tubes, SiPMs have high single Photon Detection Efficiency (PDE) with low radioactivity. For these reasons, large-scale low-background cryogenic experiments, such as the next-generation Enriched Xenon Observatory experiment (nEXO), are migrating to a SiPM-based light detection system. The aim of this talk is to show a quantitative understanding of the processes that affect the SiPM performances. In particular we will show how the SiPM PDE depends from the light quantum yield and how we can describe it as a function of the bias voltage using a minimum set of parameters. We will then use this parametrization to describe the SiPM dark noise, after-pulsing and cross-talk. Finally we will show the latest results of reflectivity and efficiency measurements performed at TRIUMF for the nEXO experiment.

## Funding information

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