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Picosecond-precision superconducting detectors and new developments in readout ASIC technology

Superconducting nanowire detectors, widely used for precision single photon detection, are being developed to enable ultra low-threshold detection of axions, dark photons, and dark matter. Due to their intrinsic signal formation process, they exhibit extremely fast signals and naturally have picosecond time precision. We will discuss the state-of-the-art timing performance of superconducting nanowire detectors, their applications in particle physics experiments, as well as recent work on related readout ASIC development using a constant fraction discrimination strategy.

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