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P1.20: Optimizing and Characterizing the Timepix2 Hybrid Pixel Detector: Enhancing Performance and Precision for Scientific and Industrial Applications

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The introduction of the new hybrid pixel detector Timepix2, as a successor to the well-known Timepix detector, has presented new opportunities for optimizing and characterizing this novel device. In this paper, we provide a detailed process for optimizing a Timepix2 detector and uncover its behavior, which enables better parameter setting for specific applications, resulting in enhanced device performance. Our newly developed calibration process, in conjunction with the optimization, has led to significant improvements in the detector's accuracy and performance, facilitating more precise data collection and analysis. These advancements pave the way for the broader utilization of Timepix2 in numerous applications, such as CubeSats and NDT.
Overall, our study provides valuable insights into the optimization and characterization of Timepix2, highlighting its potential as a powerful tool in various scientific and industrial fields.

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