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LumaCam: Event-Mode Neutron Detectors based on Scintillator Screens

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LumaCam detectors have a structure resembling many established scintillator-based imaging detectors. The key difference is the imaging chip being fast enough to identify the individual scintillation photons produced by a neutron interaction in the scintillator screen. This information can be used to provide enhanced spatial and temporal resolution, as well as noise suppression and particle discrimination capabilities. These advantages have led to a rapid growth in the usage of LumaCam detectors in the recent years, especially for time-of-flight imaging applications. We will explain the working principles of LumaCam detectors and illustrate the capabilities with results from many different applications such as fast and epithermal neutron resonance imaging, bragg-edge imaging, diffraction, and imaging at low flux sources.

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