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Real Time Transverse Profile Characterization of a Laser-Driven Accelerated Proton Beam

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In order to develop a diagnostic tool for charged particles (mainly protons) produced in laser-driven acceleration experiments, a commercial CMOS imager, the Rad-Eye by Teledyne, has been characterized. The main parameters affecting the response of the imager to visible light like thermal generation (leakage), reading noise, linearity and dynamic range have been addressed. A series of measurements with Alfa particles of different energy allowed to study the response of the imager to charged particles. Results can be reproduced by a simple model of the device charge collection that has to take into account charge diffusion from the bulk. The model can thus supply the response to monoenergetic light particles as required by the diagnostic tool. Tests on proton beams will be presented and discussed.

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