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Beam Tests of Directly Coupled Scintillator Tiles and Silicon Photomultipliers[1] STEPHEN COLE, GERALD BLAZEY, Department of Physics, Northern Illinois University, DeKalb, IL 60119 — Scintillator tiles directly coupled to photo-sensors (without wavelength shifting fiber) offer greatly simplified construction for highly granular detectors. The performance of these detectors requires uniform response across the surface of the scintillator. Flat and shaped scintillator tiles directly coupled to silicon photo-multipliers have been investigated with both a radioactive source and high energy protons. We present results which indicate that, as expected, flat cells have high response near the photo-sensors while shaped cells have a much more uniform response, suggesting cells can be tailored to ensure uniform response. We also present results demonstrating that the response of the cells to a source and to beam particles are in qualitative agreement.

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