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ClearPEM: a PET imaging system dedicated to breast cancer diagnostics

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The Clear-PEM scanner for positron emission mammography under development is described. The detector is based on pixelized LYSO crystals optically coupled to avalanche photodiodes (APD) and readout by a fast low-noise electronic system. A dedicated digital trigger and data acquisition system is used for on-line selection of coincidence events with high efficiency, large bandwidth and negligible dead-time. A specialized gantry allows to perform exams of the breast and of the axilla. In this paper we present the imaging performance estimated from Monte Carlo simulated data and the first results of the quality control of the detector modules that integrate the system under construction.

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