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## **A Single Photon Emission Computer Tomograph for breast cancer imaging**

*Saturday, 24 February 2007 09:25 (20 minutes)*

We have developed a tomograph for single photon emission imaging (SPECT) of the breast for the detection of small size tumors. The patient is prone with a pendulous breast. The SPECT is mounted on a ring that is rotating around the breast. The breast will be imaged by two opposing detector heads of approximately  $5 \times 15 \text{ cm}^2$  each, with a field of view about 13 cm wide. Each head is made up of one pixilated NaI crystal matrix coupled to three Hamamatsu H8500 PMTs with a "general purpose" collimator. Detailed simulations have been made for the optimization and the evaluation of the detector performance, in terms of detection efficiency and geometric spatial resolution. Monte Carlo results indicate that tumors of 8 mm diameter are detectable with a tumour/background ratio of 5:1. First experimental results on planar images are presented. The rotating ring is now being assembled.

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