

Abstract Submitted  
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**Development and Testing of a Novel Lanthanum Bromide Scintillation Detector for SPECT Imaging** JONATHAN SUTTON, ERIC L. BRADLEY, STAN MAJEWSKI, JOHN MCKISSON, VLADIMIR POPOV, JAMES PROFFITT, JIANGUO QIAN, MARGARET S. SAHA, ANDREW WEISENBERGER, ROBERT WELSH, AMIR YAZDI, COLLEGE OF WILLIAM AND MARY PHYSICS DEPT TEAM, COLLEGE OF WILLIAM AND MARY APPLIED SCIENCE DEPT TEAM, COLLEGE OF WILLIAM AND MARY BIOLOGY DEPT. TEAM, THOMAS JEFFERSON LAB DETECTOR AND IMAGING GROUP TEAM — A single piece of  $\text{LaBr}_3$  has been coupled ( by Bicron-St Gobain Inc.) to four special position sensitive phototubes (PSPMTs; Hamamatsu, Inc.) to create a novel detector for biological imaging with high sensitivity, very good energy resolution and high spatial resolution. The  $\text{LaBr}_3$  scintillator is coupled to four Hamamatsu H9500 PSPMTs and the resulting detector can be used with parallel or pinhole collimation. To reduce the number of active channels, novel read-out circuitry has been implemented. In addition, we have applied special techniques to the achievement of spatial uniformity across the  $100 \text{ mm}^2$  face of the detector. This technique is of special importance at the interfaces of the four square PSPMTs where the continuous scintillator must act to spread the light between the two photosensitive devices due to the reduced sensitivity in these regions. These techniques and results obtained will be described and discussed.

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