

Abstract Submitted
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Optimizing the Construction of the A1 Collaboration Neutron Detector¹ EDWARD CHINN, University of Maryland, College Park and George Washington University, A1 COLLABORATION — We report on the design and construction of a frame designed to optimize both the time efficiency and construction quality of the large scintillator elements. These elements will be assembled to form a neutron detector for use by the A1 Collaboration at the Institute for Nuclear Physics in Mainz, Germany. The design had to provide adequate support for the 20 kg scintillator bars while gluing light guides and photomultiplier tubes to both sides of the bars using optical cement. The optical cement requires approximately 24 hours to dry and 100 bars have to be glued with this apparatus. To address each of these issues, several different prototypes were designed and reviewed. The selected apparatus minimized size to meet space constraints, with reduced material cost and provided the most time-efficient way to build the neutron detector. Once the schematic design was selected, we produced technical drawings in AutoDesk Inventor. Assembled the structure and completed gluing of the first batch of scintillators, in order to verify the performance. This apparatus was successful at producing high quality scintillators which were evaluated using cosmic rays.

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Edward Chinn
University of Maryland, College Park and George Washington University

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