

Abstract Submitted
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Development of a Total Absorption γ -ray Spectrometer (TAGS) for β -decay studies at ANL¹ C.J. CHIARA, F.G. KONDEV, C.J. LISTER, M.P. CARPENTER, T. LAURITSEN, E.A. MCCUTCHAN, G. SAVARD, D. SEWERY-
NIAK, S. ZHU, ANL, M. SMITH, ANSTO (Australia) — β -decay studies of nuclei far from stability are often hindered by the complexity of the daughter's decay scheme. For large decay Q -values, the decay strength may be distributed across numerous states de-exciting through many weak γ rays. Failure to identify these γ rays can result in systematic errors in determination of the β -decay strength distribution—the “Pandemonium Effect” [1]. To circumvent this issue, we are developing a TAGS to be used in conjunction with the CARIBU facility at ANL. The TAGS is a large-volume NaI(Tl) detector with a central well in which the active source is positioned [2], resulting in over 90% γ -ray detection efficiency. A Si detector can additionally be placed within the well to allow β -tagging of the events. The information thus obtained has relevance for better characterization of the total decay heat produced in advanced nuclear reactors and for astrophysics applications. Progress on the development of TAGS at ANL will be presented. [1] J.A.Hardy *et al.*, Phys. Lett. **B71**, 307 (1977). [2] R.C.Greenwood *et al.*, Nucl. Inst. Meth. **A314**, 514 (1992).

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Christopher J. Chiara
Argonne National Laboratory

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