

Abstract Submitted  
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**Four-fold data analysis of  $^{252}\text{Cf}$  fission products** E.H. WANG, N.T. BREWER, J.H. HAMILTON, A.V. RAMAYYA, J.K. HWANG, Vanderbilt University, Y.X. LUO, LBNL/Vanderbilt University, J.O. RASMUSSEN, LBNL, S.J. ZHU, Tsinghua University, G.M. TER-AKOPIAN, YU.TS. OGANESSIAN, JINR — Prompt gamma-ray 4-fold data were built to collect  $2 \times 10^{11}$   $\gamma$ - $\gamma$ - $\gamma$ - $\gamma$  quadruple- and higher-fold  $\gamma$ -coincidence events from the spontaneous fission of  $^{252}\text{Cf}$  with Gammasphere detector arrays. The nuclei  $^{106}\text{Nb}$ ,  $^{142}\text{La}$ , Ba and Gd have been studied with these data. By using the new 4-fold data, we confirmed several weak tentative transitions in  $^{106}\text{Nb}$ ,  $^{142}\text{La}$ , Ba,  $^{148}\text{Ce}$  which were observed previously from the  $\gamma$ - $\gamma$ - $\gamma$  triple cube. Some new transitions in  $^{106}\text{Nb}$ ,  $^{142}\text{La}$  were identified by our new 4-fold data. Cascades in  $^{145}\text{Ba}$  are much clearer in four-fold data than the previous triple coincidence data. We will continue to study other nuclei by our 4-fold data with lower background than the previous triple cube. We thank M. Riley for urging us to build the 4-fold data set to get more accurate intensities.

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