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Technique for Angular Correlations and g-factor Measurements in Nuclei Produced in the Spontaneous Fission of ^{252}Cf C. GOODIN, A.V. DANIEL, K. LI, A.V. RAMAYYA, N.J. STONE, J.K. HWANG, J.H. HAMILTON, J.R. STONE, Y.X. LUO, J.O. RASMUSSEN, M.A. STOYER, S.J. ZHU, G.M. TER-AKOPIAN, I.Y. LEE — We present a new technique for measuring angular correlations between γ-rays emitted by the fragments from the spontaneous fission of ^{252}Cf and measured with Gammasphere. For states with short lifetimes ($\leq$10ps), these correlations can be used to determine the spin and parity of unknown levels. For states with long lifetimes, the technique can be used to determine the g-factor of the level in question by measuring the attenuation of the correlation caused by rotation of the nucleus about the randomly oriented domains in an un-magnetized iron foil. Applying our new method to our set of triple coincidence data collected from the fission of ^{252}Cf, we have been able to verify the spins of new levels in ^{138}Cs, as well as new levels in ^{108,110,112}Ru. We have also been able to reproduce the results of known g-factors for several nuclei, and the extremely high statistics ($\sim 10^{11}$ events) of our data set will allow us to measure unknown g-factors of other excited states. Calculation of the relative detector efficiencies and the solid angle correction factor will be discussed as well as the procedures for the angular binning, peak fitting, and background subtraction.

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