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Title: Directionally-Dependent Event-by-Event Neutron-Photon Multiplicity Correlations in  $^{252}\text{Cf}$

#### Abstract

Prompt fission correlations have been a subject of study because they may be used both to characterize fission sources and probe the underlying fission reaction. Previous work on multiplicity correlations has revealed a multiplicity competition between prompt neutrons and photons. In addition, the angular distributions of these emissions have been accurately characterized. This work explores the angle and energy dependence of three multiplicity correlations: neutron-neutron, photon-photon, and neutron-photon. Higher order analysis such as this allows for a more detailed study of the underlying fragment characteristics and their connection to the correlations present in the emissions.