Abstract Submitted
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Application of the Statistical ICA Technique in the DANCE Data Analysis[1] BAYARBADRAKH BARAMSAI, M. JANDEL, T.A. BREDEWEG, G. RUSEV, C.L. WALKER, A. COUTURE, S. MOSBY, J.L. ULLMANN, Los Alamos Natl Lab, DANCE COLLABORATION — The Detector for Advanced Neutron Capture Experiments (DANCE) at the Los Alamos Neutron Science Center is used to improve our understanding of the neutron capture reaction. DANCE is a highly efficient 4π γ-ray detector array consisting of 160 BaF_2 crystals which make it an ideal tool for neutron capture experiments. The (n,γ) reaction Q-value equals to the sum energy of all γ-rays emitted in the de-excitation cascades from the excited capture state to the ground state. The total γ-ray energy is used to identify reactions on different isotopes as well as the background. However, it's challenging to identify contribution in the Esum spectra from different isotopes with the similar Q-values. Recently we have tested the applicability of modern statistical methods such as Independent Component Analysis (ICA) to identify and separate different (n,γ) reaction yields on different isotopes that are present in the target material. ICA is a recently developed computational tool for separating multidimensional data into statistically independent additive subcomponents. In this conference talk, we present some results of the application of ICA algorithms and its modification for the DANCE experimental data analysis.

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