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The Impact of a New Evaluation of Isomeric Yield Ratios on Reactor Antineutrino Summation Calculations C.J. SEARS, E.A. MCCUTCHAN, A. MATTERA, A.A. SONZOGNI, Brookhaven National Laboratory — The number of isomeric fission yield (IFY) experimental data points available has increased five-fold since the development of the Madland-England Model, the current standard model for estimating IFY ratios. The previous evaluation of isomeric yields over twenty years ago determined this model is generally consistent with the available data from thermal neutron-induced fission of U-235, but a broader analysis has since been called for. In pursuit of a more comprehensive understanding of isomeric yield ratios, all currently available IFY ratio values, for all target nuclei and incident particles, were extracted from the EXFOR database. An evaluation was performed to produce a list of recommended experimental IFY ratios. The recommended values were used to conduct an analysis of the Madland-England model and an attempt was made to draw connections between the model's parameters and nuclear structure. The data does not suggest any particular correlation between the parameters and any basic observables of the fission fragments. The new yields were used as input to reactor antineutrino summation calculation. Their impact on the antineutrino flux, as well as a sensitivity study to determine the yields which should be improved through new measurements, will be presented.

Caroline Sears
Brookhaven National Laboratory

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