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A Closer Look at Reactor Neutrinos[1] RABEYA HUSSAINI, Brandeis University, CHARLES MARRDER, University of Notre Dame, DAVID ERNST[2], Vanderbilt University — In the Standard Model, neutrinos are nearly massless neutral particles that come in three types, called flavors: electron, muon, and tau. In vacuum, the three neutrinos have been found to change from one flavor to another. Nineteen short-baseline nuclear reactor experiments have studied this and provide a result that is known as the "reactor anomaly." Analysis of these experiments with more modern reactor flux indicate that there exists a fourth neutrino. These analyses utilize a magnitude χ^2 function which ignore spectral information. The inclusion of the additional information has been found in the analysis of the ILL experimental to find a significant increase in the evidence for the fourth neutrino, and, rather than a broad region for the phenomenological mixing parameters, specific values of the mass squared differences were found. Here we investigate experiments conducted at the Goesgen Power Plant by the Caltech-SINTUM (CST) collaboration for three separate short baseline reactor experiments. The analysis performed here will first be combined with the analysis of the other sixteen "reactor anomaly experiment," and then included in a global analysis of all relevant experiments.

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