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An ENDF/B Decay Data Sub-library Spectra for Reactor Antineutrinos Below the Inverse Beta Decay Threshold Energy.[1] RYAN LOREK, ANDREA MATTERA, ELIZABETH MCCUTCHAN, ALEJANDRO SONZOGNI, Brookhaven National Laboratory — Nuclear databases play an important role in understanding the production of electron antineutrinos in nuclear reactors, which is currently of importance for refining our understanding of neutrino oscillations, reactor monitoring, and non-proliferation. Here the ENDF/B decay data sublibrary is applied to construct the reactor antineutrino spectra below the inverse beta decay energy threshold for all relevant power reactor fuels in order to enhance research efforts in the study of Coherent Elastic Neutrino-Nucleus Scattering. At antineutrino energies below 2 MeV spectral features manifest that reveal aspects of the fundamental physics taking place in a nuclear reactor, including decay product yields and half-lives. Likewise, trends in evenness of nuclides are revealed as a function of spectral energy in the lower energy regime.

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