* We present a comparison of the equal-probable cosine (EPC) method employed by NJOY and Gauss Quadrature for computing thermal scattering cross-sections.
* The EPC method has significant discrepancy between analytic solutions to the free-gas model, including having the wrong sign for high-order moments.
* Gauss quadrature does not suffer from the same problems.
* We give quantitative comparisons between the two methods for generating Legendre moments of thermal scattering cross-sections.