Coarse Mesh Diffusion Synthetic Acceleration of Bi-Linear Discontinuous Finite Element S_N Calculation in x-y Geometry

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Absract

We demonstrates that the diffusion equation discretized on a coarse mesh can be employed to accelerate the transport equation. Our results show that coarse mesh diffusion synthetic acceleration (DSA) in x-y geometry is very effective for thin and intermediate mesh spacings independent of the scattering ratio, but is not effective for purely scattering problems and high aspect ratio zoning. However, if the scattering ratio is less than about 0.95, this procedure is very effective for all mesh spacing. This procedure can be well applicable to reactor physics analysis problems in which the scattering ratio is always less than about 0.9.