Iterative Schemes and Algorithms for Adaptive Grid Generation in One Dimension

P. Daripa
Department of Mathematics, Texas A&M University
College Station, TX 77843
Received June 8, 1990; revised July 1, 1991

Some iterative adaptive grid generators, developed by the author, are numerically explored in detail to assess their relative merits against conventional grid generators, based on a direct method of integration and interpolation. We find that some of these iterative adaptive grid generators are preferable to a direct method of integration and interpolation. In contrast with a direct method, appropriate use of these iterative adaptive grid generators produces adaptive grids with a smooth variation of the grid spacing ratio and resolution. All adaptive grid generators are a subclass of a more general iterative map. General features of this iterated map which are related to the function to be resolved are briefly discussed. The results obtained here supplements recent investigations on these adaptive grid generators by the author.

Appeared: *J. Comp. Phys.*, 100(2), pp. 284–293, 1992.