

Hierarchical Data Structures for Interactive Volume Visualization

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Abstract

In order to interactively investigate large-scale 3D data sets, we propose an improved hierarchical data structure for structured grids and an original hierarchical data structure for unstructured grids. These multi-tiered implementations allow the user to interactively control both the local and global density of the mesh. Therefore, the user can interactively refine areas of interest and decimate peripheral regions. By controlling the density of the mesh throughout the volume, the user controls where computational cycles are spent and gains a deeper insight into the geometric structure of the mesh.