



» Look Inside



» Get Access

Efficient Hybrid Rendering of Volume Data and Polygons

Theo van Walsum, Andrea J. S. Hin, Jack Versloot, Frits H. Post

Buy chapter

\$29.95 / €24.95 / £19.95 *

Buy eBook

\$149.00 / €109.19 / £94.50*



Get Access

* Final gross prices may vary according to local VAT.

Abstract

Techniques are presented for efficient visualization of any combination of volume data (scalar field) and polygon data. The scalar field is rendered using ray casting, and polygons using a depth buffer algorithm. Ray casting efficiency is improved using an item buffer produced during polygon scan conversion. The efficiency of ray casting is further improved by adaptive sampling in the screen plane, using an object space refinement criterion. For sampling the scalar field in depth along the ray, four different strategies are compared in performance and image quality.

Keywords

scientific visualization – volume rendering – ray casting – polygon rendering – scan conversion – adaptive sampling – compositing