



Unified Boundary-Aware Texturing for Interactive Volume Rendering

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In this paper, we describe a novel approach for applying texture mapping to volumetric data sets. In contrast to previous approaches, the presented technique enables a unified integration of 2D and 3D textures and thus allows to emphasize material boundaries as well as volumetric regions within a volumetric data set at the same time. One key contribution of this paper is a parametrization technique for volumetric data sets, which takes into account material boundaries and volumetric regions. Using this technique, the resulting parametrizations of volumetric data sets enable texturing effects which create a higher degree of realism in volume rendered images. We evaluate the quality of the parametrization and demonstrate the usefulness of the proposed concepts by combining volumetric texturing with volumetric lighting models to generate photorealistic volume renderings. Furthermore, we show the applicability in the area of illustrative visualization.

Additional images and videos:



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