Title: Efficient methods for visualization of volumetric data

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Abstract: The aim is to make an overview of and present implementation usefull for rendering of simulated datasets and CT and MR datasets. We will examine the methods of direct volume rendering of structured and unstructured grids and head to meaningful simultaneous realtime rendering of both types. In the first part, we briefly present the development, problems and targets of the field. Next, based on knowledge about existing algorithms, we choose one solution and present our own implementation and modification of algorithms. In detail, the object of our study will be numerical solutions of volume rendering integral by preintegration and paralelization of the process of projecting tetrahedra and perspective correction. For practical reasons we focus on the efficiency, that means computation time, used memory and usefullnes for medical presentation. The results will be compared with some other existing implementations.

Keywords: volume rendering, preintegration, unstructured grid