

EXPLICITE HYBRID NUMERICAL ALGORITHM FOR THE EFFICIENT 3D VOLUME RECONSTRUCTION USING A PHASE-FIELD METHOD

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ABSTRACT

We propose an explicit hybrid numerical method for the efficient 3D volume reconstruction from unorganized point clouds using a phase-field method. First, we define a narrow band domain embedding the unorganized point cloud and an edge indicating function. Second, we define a good initial phase-field function which speeds up the computation significantly. Third, we use a recently developed explicit hybrid numerical method for solving the three-dimensional image segmentation model to obtain efficient volume reconstruction from point cloud data. In order to demonstrate the practical applicability of the proposed method, we perform various numerical experiments.

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