

Scaleable Large, Multi-Resolution Terrain Real-Time Modeling and Visualization for Surface System Simulations

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Abstract

Modeling of landers and surface rover scenarios involves terrain environments that can span hundreds to thousands of kilometers at resolutions down to centimeter scales. The large size, and heterogeneous nature of such terrain datasets poses challenges for their use in physics-based simulations without severe run-time compromises. This work will describe modeling and GPU-based visualization techniques to overcome these challenges and provide a real-time capability for utilizing such terrain models in surface and near-surface simulations.