

10th International Conference "Distributed Computing and Grid Technologies in Science and Education" (GRID'2023)



Contribution ID: 320

Type: not specified

Parallel computing technologies and rendering optimization in the problem of fluid simulation by the example of the Incompressible Schrodinger Flow method.

Tuesday 4 July 2023 16:45 (15 minutes)

The task of fluid simulation is computationally difficult, both in terms of the required computational costs and in terms of representing the system with a large number of particles. This study considers various methods for solving this problem, such as the use of parallel computing, rendering optimization, and optimizing information transfer between the CPU and GPU. The work was conducted in the Unity environment. The study explores technologies such as GPU Instancing, Unity DOTs, C# Job System, Burst Compiler, Entity Component System, Shaders, Compute Shaders, and CUDA. A comparison and selection of features and areas of application for each technology are carried out. An example of the utilization of these tools in implementing the incompressible Schrödinger flow method is provided.

Summary

Primary author: TIULKIN, Boris (Saint Petersburg State University)

Co-author: GRISHKIN, Valery (SPbGU)

Presenter: TIULKIN, Boris (Saint Petersburg State University)

Session Classification: Distributed Computing and HPC Applications

Track Classification: Distributed Computing and HPC Applications