# Performance Portable Implementation of Octree Algorithm

Background: The In-House Aerodynamic Solver of the Institute for Rotorcraft and Vertical flight (VORTEX) is a Fast Multipole Method accelerated solver. In current implementation it is rely on octree and interaction list construction on the CPU and GPU offloading for multipole kernels. We would like to implement an octree algorithm that is able to construct the octree and interaction list also on the GPU. Ideally this octree would be a distributed octree with MPI support so that the Aerodynamic Solver (VORTEX) can also run on multiple GPUs or CPUs.
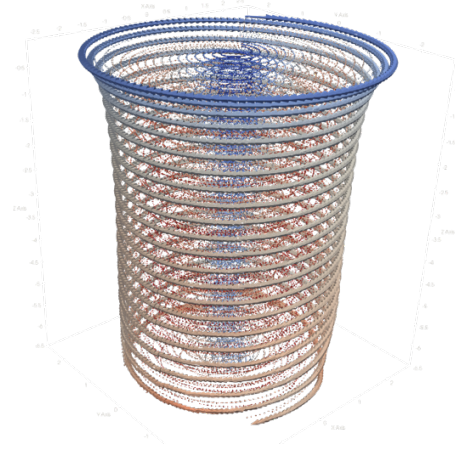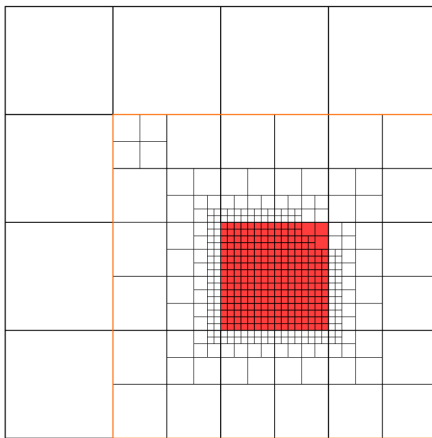
Skills: We are seeking highly motivated candidates with the ability to independently familiarize themselves into new topics. No prior background in rotor physics or aerodynamics is required. Proficiency in C++ is essential, and a background in GPGPU computing is preferred.

Tools: C++/Kokkos/Git

Task:

- Implement an octree algorithm within the framework of VORTEX.
- Integration and test of the algorithm with the current tree-code.

Language: English

Start: As soon as possible

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