# Evaluation of Efficiency of New Fluid-Structure Coupled Analysis Method

# using Parallel Enriched Free Mesh Method

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We have been already proposed a new analysis method for fluid-structure coupled problems, which has nodal consistency at the fluid-structure interface and its calculation efficiency and accuracy are high. Our method is using Enriched Free Mesh Method (EFMM) and SUPG/PSPG stabilized FEM. EFMM and SUPG/PSPG stabilized FEM have a very good chemistry because both methods are using linear tetrahedral element. We have already shown that our method can obtain fine analysis result by qualitative evaluation result. On the other hand, quantitative evaluation of our method has not yet been. So, in this paper, we verify the effectiveness of our new fluid-structure coupled analysis method. Moreover, EFMM has a problem that is very difficult to apply into parallelization. This problem caused by algorithm of EFMM. Of course, parallelization is essential in recent computational mechanics field. Therefore, in this paper, parallelization method for EFMM is also described and it verifies the efficiency.

**Keywords:** Fluid-Structure Coupled Problem, Parallel Computing, Enriched Free Mesh Method, SUPG/PSPG Stabilized FEM