1057-65-273 **Charbel Farhat**, **Jing Li*** (li@math.kent.edu), **Philip Avery** and **Tezaur Radek**. *A dual-primal FETI method for solving a class of fluid-structure interaction problems in frequency domain.* Preliminary report.

The dual-primal finite element tearing and interconnecting method (FETI-DP) is extended to solving systems of linear equations arising from finite element discretization simulating a class of fluid-structure interaction problems in frequency domain. Time harmonic solutions are sought after for a given frequency. A preconditioned GMRES iteration is used to solve the resulting linear equations of Lagrange multipliers introduced on the subdomain boundaries. The coupling between the fluid and the structure on the fluid-structure wet interface requires appropriate choice of coarse level degrees of freedom in the FETI-DP algorithm to achieve fast convergence. Numerical experiments of solving several three-dimensional fluid-structure interaction problems in the mid-frequency regime demonstrate the satisfactory performance of the proposed algorithm. (Received January 25, 2010)