A FICTITIOUS DOMAIN APPROACH WITH DISTRIBUTED LAGRANGE MULTIPLIER FOR FLUID-STRUCTURE INTERACTIONS

DANIELE BOFFI AND LUCIA GASTALDI

Abstract. In this talk we consider a recently introduced formulation for fluid-structure interaction, which is based on a fictitious domain approach with a distributed Lagrange multiplier, for the case of structure domain of the same dimension as the fluid domain. The time discretization of the problem leads to a mixed problem for which a rigorous stability analysis is provided. The finite element space discretization is discussed and optimal convergence estimates are proved. This formulation can be adapted also to the case of thin structures and the analysis of the corresponding finite element discretization provides optimal convergence under some assumption on the mesh.

Dipartimento di Matematica "F. Casorati", University of Pavia, Italy
E-mail address: daniele.boffi@unipv.it

DICATAM - Sezione di Matematica, Universit di Brescia, Brescia, Italy
E-mail address: lucia.gastaldi@unibs.it