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**The Effectiveness of the Perfectly Matched Layer in Fluid-Structure Interaction Problems** LUCY ZHANG, JUBIAO YANG, Rensselaer Polytechnic Institute — It is well recognized that spurious reflections on computational domain boundaries can have contamination of the flow field when solving fluid and/or wave equations. The effects are even more pronounced in fluid-structure interaction (FSI) problems, since the solid responses may be distorted due to the contaminated flow field. In this work, we implemented the perfectly matched layer (PML) technique and applied it in our fully-coupled immersed finite element method (IFEM), where Navier-Stokes equations are solved in the fluid domain with finite element method. With PML included as an absorbing layer it successfully absorbs outgoing waves from the interior of the computational domain and therefore keeps them from reflecting back from the computational boundary. Validation cases are shown to demonstrate the effectiveness of the PML in pure computational fluid dynamics cases, and then followed by FSI problems.

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