

Fluid-Structure Interaction of a Double Curvature Arch Dam Under Seismic Loading By the Application of Added Mass Technique and Acoustic Elements

R. Manikandan¹, P. Sultana¹

¹National Institute of Technology Silchar, Silchar, Assam, India

Abstract

Fluid Structure Interaction (FSI) plays an important role in the seismic analysis and the design of Hydraulic structures. In this study, the acoustic finite element model is analyzed with impounded water considering appropriate boundary conditions between the water & the upstream face of the dam. The water effect was considered according to added mass procedure as well as acoustic elements. Here the effect of fluid compressibility and the boundary conditions are used to apply the hydrodynamic pressure using COMSOL Multiphysics® software. The impact of hydrodynamic pressure on the upstream face of the dam is obtained by the computation of stress and displacements for the double curvature arch dam considering compression of fluid element.