

# Fluid Structure Interaction of Arch Dam on Full Reservoir Level Under Seismic Loading

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## Abstract

The Fluid Structure Interaction (FSI) is the important role for the seismic analysis and the design of hydraulic structures. The fluid structure interaction occurs due to the exchange of energy between moving fluid and solid structures. In this study the Finite Element Model is analyzed with impounded water considering appropriate boundary conditions between the water & the upstream face of the dam. The fluid on the upstream side is considered to be incompressible, inviscous, irrotational. Here the effect of fluid compressibility are analyzed by the use of COMSOL Multiphysics® software. The impact of water pressure on the upstream face of the dam is obtained by the computation of stress and displacements for the arch dam considering compression of fluid element. The fluid flow in the dam is described by the incompressible Navier-Stokes equations for 2D Dam model and the Solid Mechanics interface features for stress analysis and for solving the displacements.

## Reference

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## Figures used in the abstract

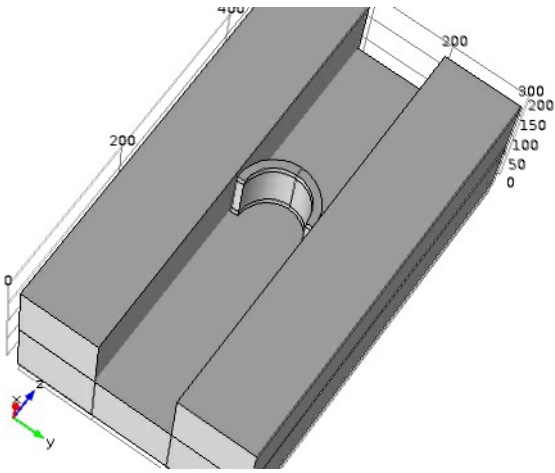


Figure 1: Arch dam model using COMSOL Multiphysics® software.

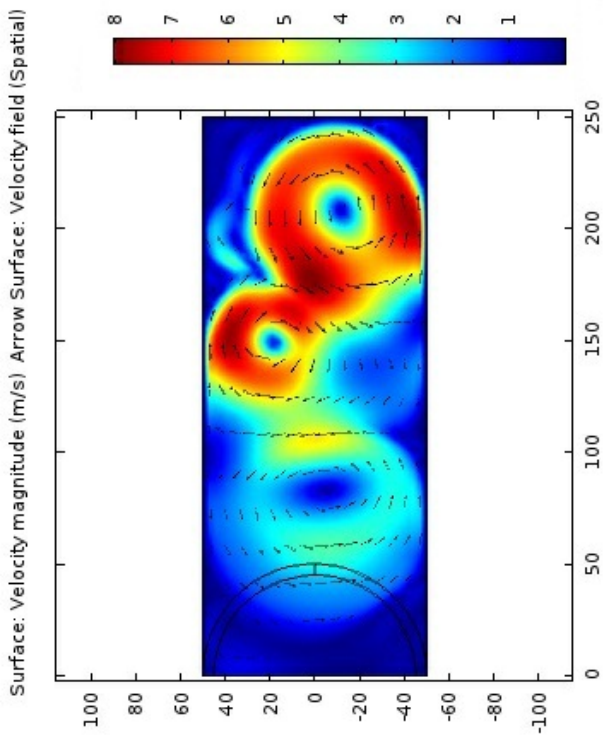


Figure 2: Velocity magnitude on the Upstream Side of the dam.