

Numerical model of acoustic fluid-structure interaction in application to numerical analysis of dam structure with thermal effects included

*Emina Hadzalic¹⁾ Adnan Ibrahimbegovic ²⁾ and Samir Dolarevic³⁾

^{1), 3)} Faculty of Civil Engineering, University of Sarajevo, Patriotske lige 30, 71000 Sarajevo, Bosnia and Herzegovina

²⁾ Université de Technologie de Compiègne, Laboratoire Roberval de Mécanique, Centre de Recherche Royallieu, 60200 Compiègne, France

¹⁾ emina.hadzalic@gf.unsa.ba

ABSTRACT

In this paper, we present a numerical model of acoustic fluid-structure interaction in application to dam-reservoir systems. The response of the structure is modeled with the thermo-hydro-mechanical coupled discrete beam lattice model, which is based on Voronoi cell representation of the domain with enhanced Timoshenko beam finite elements acting as cohesive links. The pore fluid flow and the heat flow are introduced in the model through Darcy's law and Fourier's law for heat conduction, respectively. The motion of the external fluid is described with acoustic wave theory.

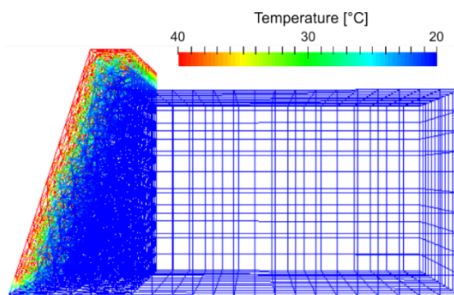


Fig. 1 Temperature evolution in the pore-saturated dam structure

REFERENCES

Hadzalic E, Ibrahimbegovic A and Dolarevic S 2019, Theoretical formulation and seamless discrete approximation for localized failure of saturated poro-plastic structure interacting with reservoir, *Computers & Structures*, 214: 73-93

ACKNOWLEDGMENTS

This work was supported by the project funded by the Federal Ministry of Education and Science, Bosnia and Herzegovina. This support is gratefully acknowledged.

¹⁾ Assistant professor

²⁾ Professor

³⁾ Professor