

Dam break with elastic gate opening

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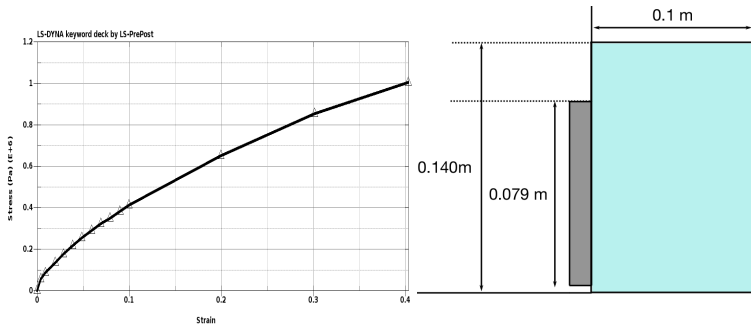
LSDYNA ICFD solver

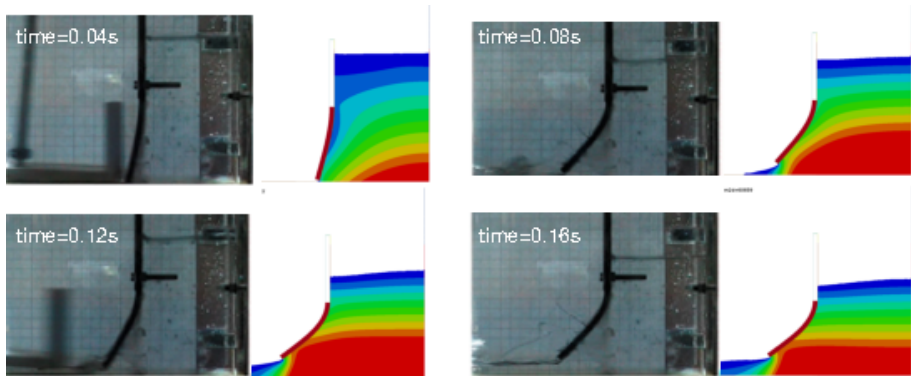
Dev version SVN 109309

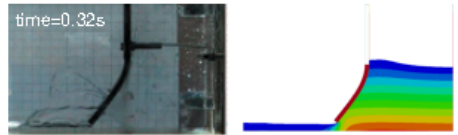


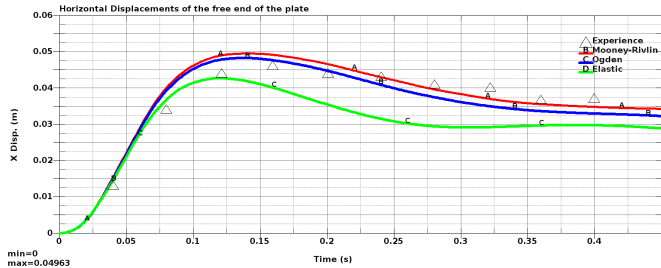
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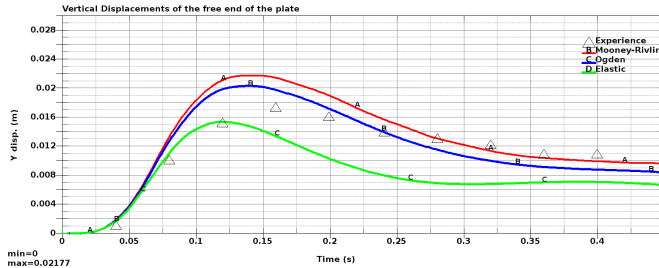
The proposed test case consists of a flexible gate, clamped at one end and free at the other which interacts with a mass of water initially confined in a free surface tank behind the gate. Due to the uncertainty of the material used, an elastic material as well as hyperelastic models (Ogden, Mooney-Rivlin) will be tested. For the elastic material, density will be equal to 1100kg.m^{-3} , Young's modulus to $E = 10\text{e}6\text{Pa}$ and the Poisson coefficient to 0.4. For the hyperelastic materials, a strain-stress curve will be used as input. Freeslip boundary conditions will be used throughout the model and the timestep chosen will be $5\text{e} - 4\text{s}$.

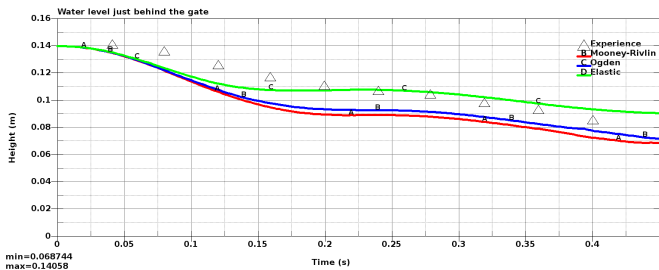


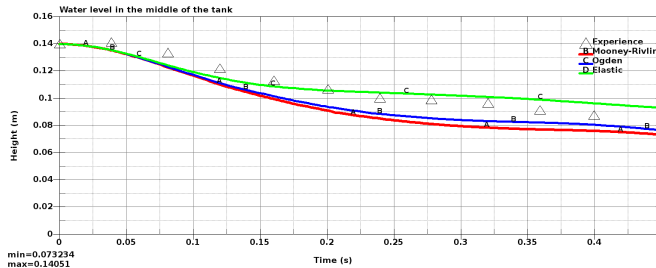












- [1] C. Antoci, M. Gallati, and S. Sibilla, "Numerical simulation of fluid-structure interaction by sph," *Computers and Structures*, vol. 85, no. 11–14, pp. 879 – 890, 2007.
Fourth MIT Conference on Computational Fluid and Solid Mechanics.
- [2] ASME 27th International Conference on Offshore Mechanics and Arctic Engineering, *Fluid structure interaction simulation using an incompressible SPH method*, (Estoril, Portugal), OMAE2008, June 2008.
- [3] Q. Yang, *SPH Simulation of Fluid-Structure Interaction Problems with Application to Hovercraft*.
PhD thesis, Virginia Polytechnic Institute and State University, 2011.

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