

Accuracy of original MPM

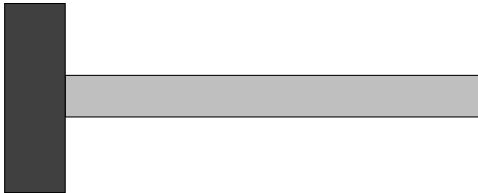
Lisa Wobbes, Roel Tielen

November 22, 2015

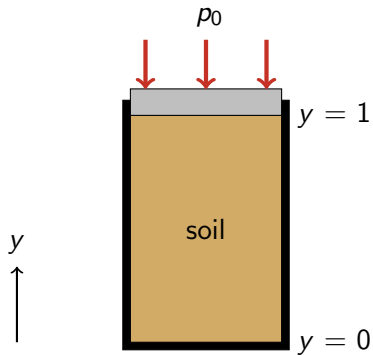
Outline

- Numerical accuracy
- Benchmarks
 - Vibrating linear-elastic bar
 - Vibrating hyper-elastic bar
 - Oedometer
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Vibrating bar



Oedometer problem



schematic representation

Oedometer: model

$$\rho \frac{\partial \hat{v}}{\partial t} = \frac{\partial \hat{\sigma}}{\partial y} - \rho g,$$

$$\frac{\partial \hat{\sigma}}{\partial t} = E \frac{\partial \varepsilon}{\partial t}.$$

Boundary conditions:

$$\hat{v}(0, t) = 0,$$

$$\hat{\sigma}(H, t) = -p_0.$$

Initial conditions:

$$\hat{v}(y, 0) = 0,$$

$$\hat{\sigma}(y, 0) = 0.$$