

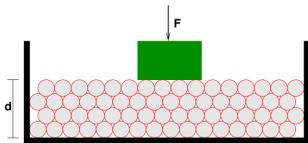


Stress Propagation in Sand Beds

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The Problem

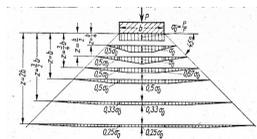
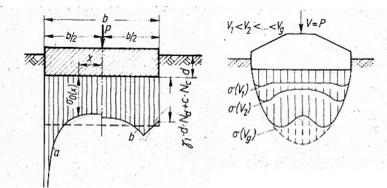


What is the influence of **disorder** and **thickness** on the

- pressure distribution
- force network ?

Soil Mechanics

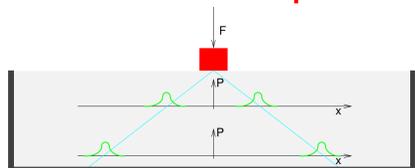
Foundation of buildings is an important problem



DIN 1045



FPA Fixed Principal Axis



Thin Layer – 20 layers

monodisperse

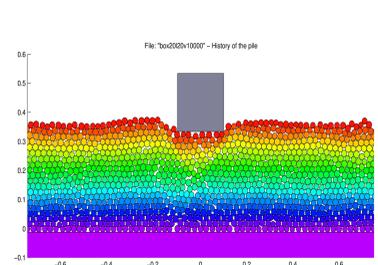
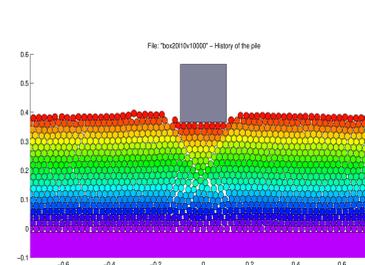
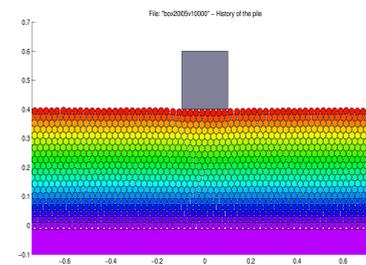
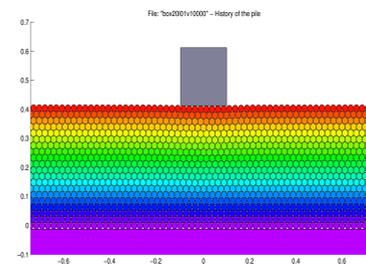
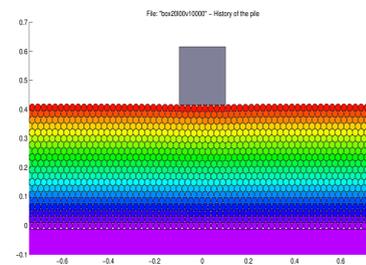
polydisperse 1%

polydisperse 5%

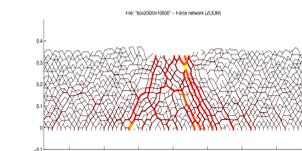
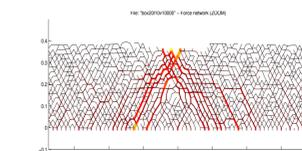
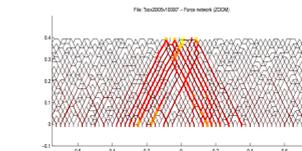
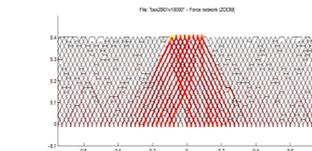
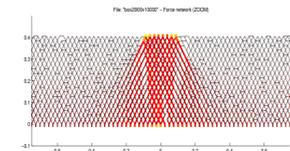
polydisperse 10%

polydisperse 20%

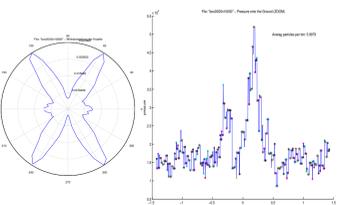
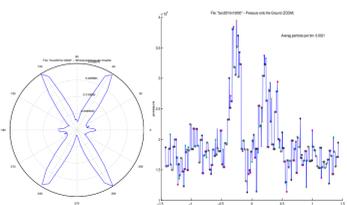
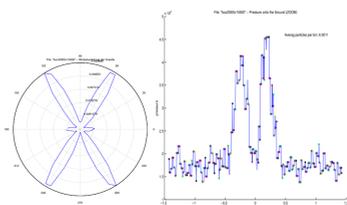
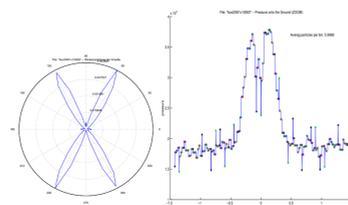
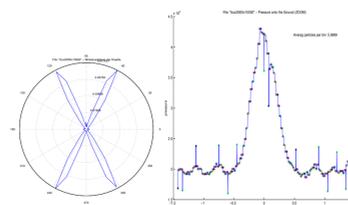
Setup of the sand bed



Force network



Histogram of the force directions & pressure onto the ground



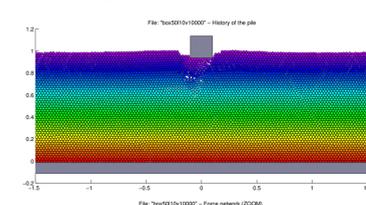
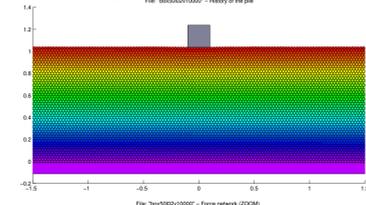
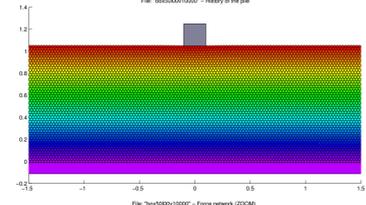
Thick Layer – 50 layers

monodisperse

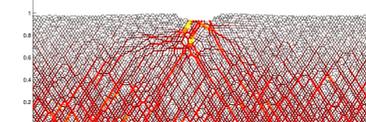
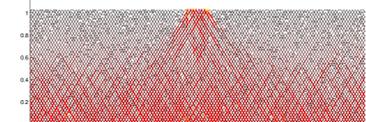
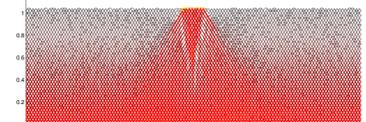
polydisperse 2%

polydisperse 10%

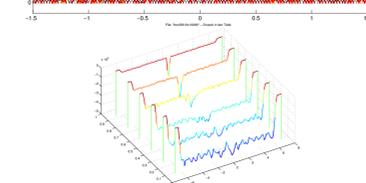
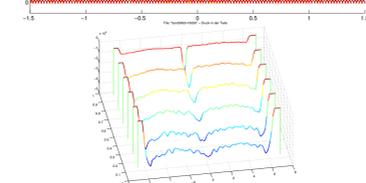
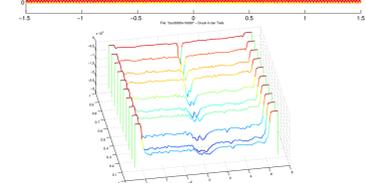
Setup of the sand bed



Force network



σ_{zz} inside of the sand bed



Thin layer – disordered

