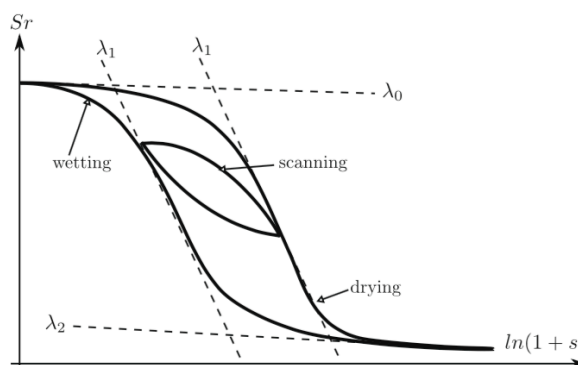
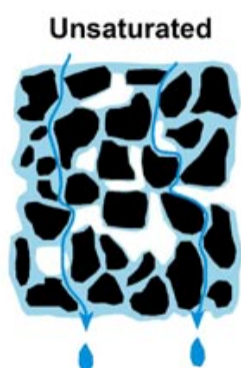


Master's Thesis

Modeling of Soil-Water Characteristic Curves with hysteresis behavior in unsaturated soils

Supervisor: Dr.-Ing. Meng-Meng Zhou



Background: In unsaturated soils, soil–water characteristic curves (SWCC) exhibit usually hysteresis behavior between drying and wetting curves (transitions between drying and wetting curves are commonly known as ‘scanning curves’). The SWCC defines the relationship between the degree of water saturation and suction (air pressure minus water pressure), which is a crucial constitutive relation for modeling unsaturated soils in geomechanics.

Task: Within this master thesis the following tasks are to be completed:

- Study of the existing unsaturated soil model in the FE program KRATOS
- Study of the hysteresis model of SWCC
- Implementation of the SWCC with hysteresis for the unsaturated soil model
- Verification and validation of the numerical models

Note: This thesis can be written either in English or in German.

Reference:

[1] D.M. Pedroso, D.J. Williams, A novel approach for modelling soil–water characteristic curves with hysteresis, *Comput. Geotech.* 37 (2010) 374–380. <http://dx.doi.org/10.1016/j.compgeo.2009.12.004>.

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