

## Final Report

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**Home University:** University of Southampton

**Guest Department:** Unit of Geotechnical Engineering **Guest University:** University of Innsbruck

**From:** 11/07 **Until:** 15/07

**Title of the Research Project:** Modelling element tests as a boundary value problem

**Report about visit and future plans** (max. 200 words, English):

During the visit, we continued our ongoing collaboration that recently resulted in a paper published. We discussed the preparation of a poster for the *ALERTGeomaterialsWorkshop*, describing those results.

We then started a new collaboration, focusing on modelling of the direct simple shear test as a boundary value problem. We discussed how to design our numerical model. A working model was developed in PLAXIS3D (see Figure 1) and preliminary results were analysed (see Figure 2). We use hypoplasticity as constitutive model, which is one of the specialities of Gertraud Medicus. We also worked on the development of simplified MATLAB code representing the same test.

The guest lecture took place on Tuesday 12/07 (see Figure 3), online because of covid restrictions, and attracted about 20 viewers, some of them from outside of Austria. The presentation was recorded and uploaded on [Youtube](#) with 56 views within a week.

Our future plans will build on the preliminary results to investigate further test conditions to gain enough results for a journal paper.

After a year of collaborating virtually with Gertraud, it was nice and more productive to meet and discuss in person. I therefore thank the BritInn Network for funding my stay in Innsbruck.

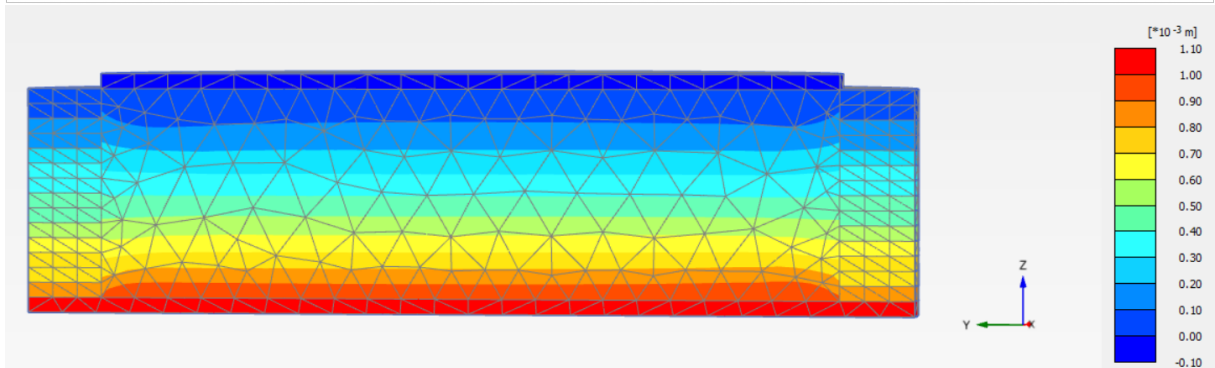


Figure 1 Total lateral displacement - Side view of the 3D PLAXIS model



Figure 2 Discussion of the numerical results

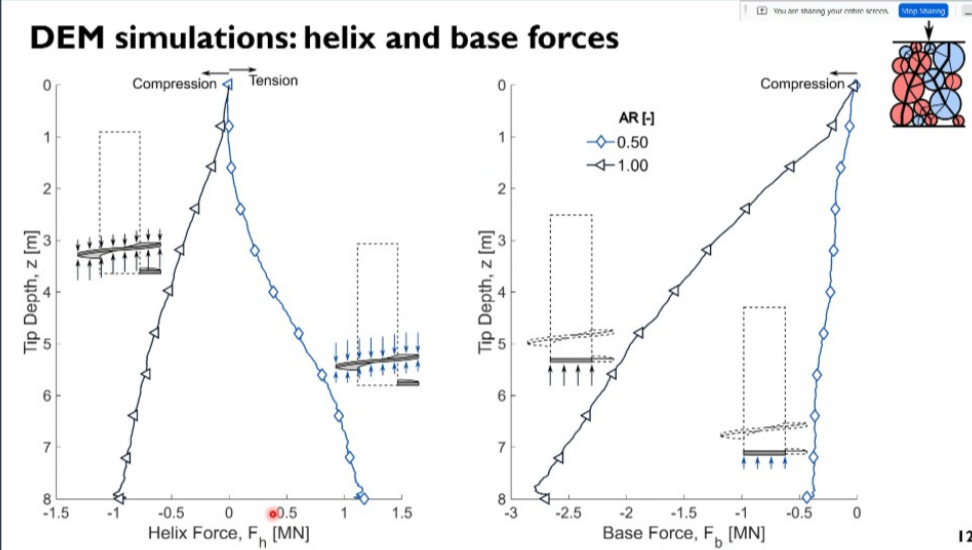


Figure 3 Screenshot of the invited lecture

**Picture Credits:** Benjamin Cerfontaine, Sarah-Jane Loretz-Theodorine, Gertraud Medicus