

流体科学研究所 特別講演会のお知らせ

2022/8/2 TUE 13:30-14:30 @ONLINE

Dr. Shihuai Zhang from ETZ Zurich is visiting the Ito-Mukuhira lab. for collaboration study. He will give a seminar as IFS special seminar series. He is working on rock shear failure and crustal stress. Please join his seminar.

Dr. Shihuai Zhang

ETH Zürich, Switzerland

E-mail: zhangshi*ethz.ch (*→@)

Control of frictional slips on the spatial-temporal evolution of crustal stress

Abstract: Frictional slip is one of the dominant physical processes in the Earth's upper crust. It can not only keep the brittle crust in a state of frictional equilibrium, but also modify the local stress fields in the vicinity of discontinuities. In this presentation, I will introduce a quasi-static, 2D stochastic Coulomb model to quantitatively describe how frictional slips 1) maintain the dynamic equilibrium status in the brittle crust via stress relaxation, and 2) cause spatial stress variations around a fault zone. In both applications, the global mechanical response of the model is quantitatively related to the local frictional slips under specific boundary conditions. It shows that the stress evolution in time and space manifests as a self-organized process through frictional slips. The model also indicates that the natural variability of fault friction and slip uncertainty can significantly affect the spatial-temporal stress evolution in the brittle crust, which is substantially different from a deterministic estimation via an empirical frictional coefficient. To sum up, this model quantitatively corroborates and extends the notion of frictional equilibrium, and systematically reveals the local stress variations around a fault zone.

Zoom ミーティング Info

<https://zoom.us/j/91430997662?pwd=NENzaEFPZGZtcEsvcm4rTGNGMThRdz09>

ミーティング ID: 914 3099 7662

パスコード: 782836

Info.

東北大学 流体科学研究所 地殻環境エネルギー分野

椋平 祐輔 Yusuke Mukuhira

Email: mukuhira*tohoku.ac.jp(*→@)