

A会場 | 一般セッション：S08. 地震発生の物理

2025年10月20日(月) 9:00 ~ 10:30 A会場(501)

[S08] 地震発生の物理

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10:15 ~ 10:30

[S08-06] Design for numerical simulation of induced seismicity using multi-scale heterogeneity model

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The main mechanism of any induced seismicity is an increase in pore pressure, while that of natural seismicity is a change in the applied shear stress and surrounding aseismic slip. The multiscale heterogeneity model of a fault is adapted to the behavior of the fault from a macroscopic point of view in which any small disturbance (a nucleation process) can grow to any scale even if the shear stress has not reached the fault strength at the beginning and the nucleation point has therefore been chosen stochastically. In Aochi & Ide (2009), nucleation is chosen according to a weighting function in stress accumulation, implicitly assuming that the expected seismicity rate is sufficiently low relative to the loading rate. However, this choice should be more reasonable in the context of induced seismicity. In this study, we introduce stochastically a fault strength only for determining the rupture initiation ("initiation fault strength") on the smallest patches of the model, described with a Weibull function, while keeping the macroscopic fault strength uniform over a fault. Every small patch is ruptured once the stress reaches the initiation fault strength. This includes no assumption on the seismicity rate and allows us to discuss the pore pressure change and the seismicity rate.