

橢圓顆粒間規則性滯動剪力行為之定性探討

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摘要

本研究以橢圓形顆粒相對錯動關係來模擬碎屑顆粒間的剪力及膨脹行為，主要依據顆粒間的力平衡及相互爬升幾何膨脹變位關係，建立一套適合橢圓狀顆粒剪動行為之理論模式，以探討夾層顆粒所引起的剪力反覆升降滯動行為。研究結果顯示：在低正向應力環境下，顆粒間的相互爬升運動可定性解釋規則性滯動現象之一種原因；滯動曲線中每個循環平均剪動位移與顆粒的粒徑大小有關。

QUALITATIVE STUDY ON THE REGULARLY STICK-SLIP SHEAR BEHAVIOR OF ELLIPTICAL PARTICLES

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Key words : stick-slip, elliptical particle, shear behavior.

ABSTRACT

The debris particles may be gradually produced by the fault sliding. In this paper, the debris particles are simulated by ellipsoids to investigate the regularly stick-slip behavior. The derivation of the mathematical formulas is based on the force equilibrium and the geometric relationship between elliptical particles. Two main conclusions show as follows : (1) The relative shear behavior between particles under low normal stress can explain the stick-slip phenomena. (2) The particle size is approximate to the average shear displacement in every stick-slip cycle.