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2018年12月7日 星期五　　　　　　　　　　　　　　　　　　　　　　　　　　　欢迎光临《

含石量对土石混合体压桩承载力影响的离散元分析

Influences of rock content on bearing capability of soil-rock mixture duging pile penetration with discrete element analysis

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中文摘要:

　　土石混合体是介于土体和岩体之间的一种非均质、非连续和非线性的特殊工程地质材料，其在压桩贯入过程中的承载力受含石量的影响非常显著。本文分别采用球形颗粒和非规则镶嵌组合颗粒模拟土体颗粒和块石，对不同含石量下压桩贯入过程进行离散元数值分析。计算结果表明，桩柱阻力及其波动规律在不同含石量下有很大的差别。高含石量下的阻力要明显大于低含石量下的阻力，且其波动性也更加明显。通过对土石混合体内部力链结构的细观分析，揭示了压桩贯入过程中承载力随含石量变化的内在机理。以上研究有助于分析土石混合体材料的宏观力学行为，深入研究其在复杂工程条件下的力学特性。

英文摘要:

　　Soil and rock mixture is a special engineering geological material with the non-homogeneous,non-continuous and non-linear mechanical characteristics.In the penetration process of pile,the rock content has obvious influence on its bearing capacity.In this paper,we use spherical particles to simulate soil material,and irregular overlapped clumps to model the rock rubble with Discrete Element Model (DEM).The bearing capacity of pile is obvious different under various rock contents.The resistance of high rock content is much higher than that of low rock content.Moreover,the fluctuation of resistance during the penetration process is more obvious under high rock content condition.The influence of rock content on bearing capacity of pile is discussed based on the distribution of inter-particle force chains on micro scale.It is effective to analyze the macroscopic mechanical behaviors of soil and rock mixture with discrete element method,especially to determine its mechanical characteristics under complex engineering conditions.

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