

报告题目: 数字岩土 - 现状与展望
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摘要: 岩土体的结构性是影响其物理力学行为的内在特性之一。随着数字图像技术的发展, 使得对岩土体结构性的研究从定性走向定量, 从宏观走向细观、甚至微观。同时, 使得建立与真实世界中的岩土体物理模型相对应的岩土体的数字孪生模型成为可能, 进而促使了岩土体细观力学的发展。报告将围绕数字岩土中的关键科学和技术问题, 从岩土体结构定量分析、2D/3D 数字模型重构、数值实验、细观力学等方法的研究现状及前沿进行介绍, 并对数字岩土在土石混合体物理力学性质研究方面的应用进行阐述。

关键词: 数字岩土, 数字图像处理, 细观结构, 细观力学

Digital Geomaterial - Research Status and Prospects

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Abstract: The structure of geomaterial is one of the inherent characteristics that influence its physical and mechanical behaviors. With the development of digital image processing, the research on the structure of geomaterial is developing from qualitative to quantitative, and from macro to meso and even micro. Which This also makes it possible to build a digital twin model of geomaterial corresponding to the physical model of geomaterial in the real world, and in turn promotes the development of meso-mechanics of geomaterial. The report will focus on the research status and prospects in the key issues of the study on digital geomaterial, from including the quantitative analysis of the structure, reconstruction of the digital model, numerical tests, meso-mechanics and so on. And the application of digital geomaterial in the study of physical and mechanical behavior of soil-rock mixture is also described.

Keywords: Digital geomaterial, Digital image processing (DIP), Meso-structure, Meso-Mechanics