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收录、引用及期刊影响因子 检索报告



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| 检索机构: | 浙江省科技信息研究院 (国家一级科技查新单位) |
| 检索结果: <p>经检索《ISI Web of Science》, Anxing Zheng 撰写的下述 1 篇论文被收录, 总被引频次为 0 次。</p> <p>1. 标题: Extended Finite Element Method for Analyzing Hydraulic Fracturing of Rock Cracks Under Compression 作者: Zheng, AX (Zheng, Anxing) 来源出版物: PROCESSES 卷: 13 期: 2 文献号: 514 DOI: 10.3390/pr13020514 Published Date: 2025 FEB Web of Science 核心合集中的 "被引频次": 0 被引频次合计: 0 摘要: This paper presents a numerical model based on the extended finite element method (XFEM) to tackle the problems of hydraulic fracturing and frictional contact in rock cracks. By considering the water pressure distribution on the crack surfaces and the virtual work principle of frictional contact on the crack surfaces, the governing equations for analyzing hydraulic fracturing and frictional contact problems using the XFEM are derived, and the implementation method of the XFEM with frictional contact and water pressure distribution on the crack surfaces is presented. Taking a single-edge-cracked flat plate as an example, the interaction integral method</p> | |

is employed to compute the stress intensity factor in the case of water pressure distribution on the crack surface. Subsequently, a comparative analysis is carried out between the obtained results and the exact solutions. It is demonstrated that this method can yield highly accurate calculation results. Taking a flat plate with a through crack as an example, the nonlinear complementary method is adopted to solve the frictional contact problem. This contact algorithm can effectively prevent the crack surfaces from interpenetrating, and its results are consistent with those calculated by the finite-element penalty function method. Based on the XFEM, the hydraulic fracturing analysis of a flat plate with a central crack under uniaxial compression is carried out. The critical water pressure decreases as the crack length increases, and the critical water pressure increases as the external axial pressure increases. Taking a gravity dam with an initial crack as an example, the calculation results show that hydraulic fracturing will increase the mode I stress-intensity factor at the crack's tip and reduce the stability of the crack located in the dam foundation of the gravity dam.

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注:

以上检索结果均得到被检索人的确认。

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2025 年 6 月 16 日

审核通过