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山区采动裂缝对地表移动变形的影响分析

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摘要 根据现场实测资料，分析地表产生采动裂缝的4个阶段及其形成过程机制，揭示采动裂缝对山区地表移动变形的影响：(1) 地表采动裂缝使得地表下沉呈现出非连续性移动特性，并在凹形地貌部位，地表下沉值减小；在凸形地貌部位，地表下沉值增大。(2) 采动裂缝会使山区地表沿坡体下坡方向的水平移动值增大，增大的量值与坡体形态及与采空区相对位置、表土层特性有关。(3) 采动裂缝的产生会改变水平变形的性质：在拉伸变形区域出现拉伸变形值减小或转变为压缩变形值；或在压缩变形区域出现拉伸变形或压缩变形值减小情形，并且会使拉伸变形区域的拉伸变形值增大，压缩变形区域的压缩变形值增大。

关键词 采矿工程；沉陷；山区；地表移动变形；采动裂缝

分类号

ANALYSIS OF EFFECT OF FISSURES CAUSED BY UNDERGROUND MINING ON GROUND MOVEMENT AND DEFORMATION

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Abstract

Based on in-situ data，the four stages of fissures and the mechanism of ground movement and deformation caused by underground mining are analyzed. The results are drawn as follows. (1) Subsidence is shown of discontinuous movement，and it is found in concave region；the ground subsidence decreases，but increases in convex region. (2) The fissure can increase the displacement along with the mountain slope down ramp direction，and the increase is related to slope form，position of gob，and characteristics of surface. (3) The fissure can change the horizontal deformation properties. It can reduce tensile strain or increase the compression strain in the tensile strain region，or reduce compression strain or tensile strain in compression strain region，or increase strain in tensile or compression regions.

Key words mining engineering；subsidence；mountainous region；movement and deformation；fissure caused by underground mining

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