

◆ Research Paper ◆

The Numerical Simulation of a Coal Mining Based on the 3D Geologic Model

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Abstract: According to the geological drilling data of a mine area, established the 3D geological model of the mine area. Drawn the sectional view from the model and compared with the actual mining exploration line sectional view, verify the reliability of the model. Based on the multi-layer DEM 3D geological model, proceed simulation in the excavation of the tunnel using the method of advanced excavation. Got the initial gravity field, the calculate results of deferent work layer advance distance. The results showed: When the work layer advanced 200-975m, fault had no effect on mining. When advanced to 990m (from the fault F3 25m), the damage area caused by the mining has been through to the fault, if the working layer keep advance to the fault, it's highly probable to happen roof fall, sudden water accidents. It can be inferred, to NO.9 coalbed first mining face, it should reserve 25 ~ 10m coal pillars at the F3 fault to prevent accidents.

Keywords: 3D geological model; fault; coal mining; numerical simulation