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基于SOS微震监测系统的综放工作面来压周期分析

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FULLY-MECHANIZED COALFACE PERIODIC WEIGHTING ANALYSIS BASED ON SOS MICRO-SEISMIC MONITORING SYSTEM

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全文: PDF (3165 KB) HTML (KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 针对综放回采工作面老顶来压时易发生冒顶冲击地压事故,某矿1305综放工作面采用波兰矿山研究总院研制的新一代SOS高精度微震监测系统,对工作面自开切眼回采开始进行全程时时连续监测。统计分析微地震事件、事件发生频率及事件总能量的周期性变化,从而推断出老顶断裂的周期性。再经过理论计算验证系统的准确性。结果表明:工作面的周期来压与矿震事件能量的周期变化存在相对应的关系; 强烈微震活动发生前有一段弱震活动时期,为强震的发生积蓄了更多的能量; 周期来压时释放的总能量在某一特定水平波动,但波动的变化不稳定性增强。该结论对工作面安全回采及预防矿震冲击地压的发生具有一定的现实指导意义。

关键词: 微地震 综放开采 周期来压 来压步距 微震监测系统

Abstract: This paper aims to effectively prevent rock burst accidents occurs because of the roof caving with the old roof periodic weighting in fully-mechanized sublevel caving mining face.It uses the mining examples of fully-mechanized sublevel caving mining in 1305 working face of Dongtan mine and adopts a new generation SOS microseism monitoring and measuring system.The system was made in Poland Mining Research Institute.It was developed to full time monitoring and measuring on the working face since the beginning of working face interconnection.The paper analyzes statistically the micro earthquake events,incident frequency and event total energy periodic changes.Thus it deduces the old roof fracture periodicity.Afterwards,it proves the accuracy of the system through theoretical calculations.The results show that there is a corresponding relationship between the working face periodic weighting and event total energy periodic changing. Before the strong micro-seismic activity occurred,there would be a weak seismic activity period and the weak seismic activity would play energy accumulation role to the strong seismic occurred.Releasing of the total energy in periodic weighting fluctuates in a certain range fluctuations,but the instability of fluctuation changes enhanced.The conclusion has certain actual significance for the working face safety mining and preventing the occurrence of mining-induced earthquakes.

Key words: Micro-seismic activity Fully-mechanized sublevel caving mining Periodic weighting Weighting step distance Micro-seism monitoring and measuring system

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