

凡口铅锌矿多通道微震监测系统及其应用研究

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摘要 微震监测技术是深部矿床地压监测的重要手段。简要概括了凡口铅锌矿深部矿床赋存条件、地压特征、地压灾害以及建立微震监测系统的必要性; 对建立的16通道微震监测系统的组成、监测系统的性能、微震监测范围进行了详细介绍; 通过对传感器布置优化分析, 绘出传感器布置的一个优化分析结果的震源定位等值线实例图。采用人工放炮产生的震源对微震监测系统的震源定位性能进行测试, 绘出测试结果和系统监测定位图, 并比较实际测量和系统监测分析结果, 两者结果对比表明, 在传感器阵列内的震源定位误差不大于5 m时, 监测系统对震源具有较高的定位精度。采用该系统对深部采区的大爆破余震进行监测发现, 余震事件大多发生在数分钟之内, 这表明目前采区围岩的稳定性较好。

关键词 [采矿工程](#); [深部矿床](#); [微震监测](#); [震源定位](#); [余震](#)

分类号

RESEARCH OF MULTI-CHANNEL MICROSEISMIC MONITORING SYSTEM AND ITS APPLICATION TO FANKOU LEAD-ZINC MINE

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Abstract

Microseismic monitoring technique is a main means of ground pressure monitoring for deep mines. The occurrence, the ground pressure characteristics and hazards of deep orebody at Fankou mine are summarized briefly. The composition and performance of 16-channel microseismic monitoring system established recently in the mine and the monitoring area are introduced in detail. Optimal analysis of layout of sensors gives the optimized results of sensors positions presented through an isogram of the source location. Source location errors are tested through artificial blasts. The test data and the monitoring source location figure are presented. The tested results are compared with those of theoretical results determined by the monitoring system. The compared results show a smaller locating error of less than 5 meters within sensors array and the perfect source locating performance of the system. Large blasts aftershocks in deep mining area are monitored by this system. The results show that all monitored aftershocks occur in a few minutes after blasts, which means rock mass surrounding the mining area has a good stability condition at present.

Key words [mining engineering](#); [deep mine](#); [microseismic monitoring](#); [source location](#); [aftershock](#)

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