

Monitoring, warning and dynamic control of rockbursts at tunnels

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This paper introduces key features and failure of rockbursts at tunnels, what is rockburst warning? Why can use the *in situ* monitored microseismicity to warn dynamically intensity and location of rockbursts? An intelligent micorseismicity system and sensors were developed. The *in situ* micorseismicity monitoring method is established. A dynamic method has been established to warn intensity and location of rockbursts. Techniques to optimize excavation, distressing, and support system have been developed to mitigate rockburst risk. The technology has been widely and successfully to mitigate rockbursts risk at headrace and drainage tunnels at Jinping II hydropower station, tunnels at China Jinping Underground Laboratory Phase II, tunnels at new Chuan-Zang Railway, and headrace tunnels at NEELUM-JHELUM hydroelectric project, Pakistan.