

## **Simulation of Vibration Caused by Blasting for a Layered Slope**

J. F. Zhang<sup>\*</sup>, Hua Ding, J. Y. Qiao, Jinze Bai

*Institute of Mechanics Chinese Academy of Science, No.15, North Forth-Ring West Road, Beijing, 100080, China*

e-mail:

### **Abstract**

Recent studies showed that vibration caused by blasting mainly reflects the property of geological structure itself neighboring the blasting center. Different vibration signals can be collected for different geological structures under blasting. Hence, vibration signal can be used to identify geological structure, especial for a slope with a weak layer. As the geological structure for a practical slope is usually complicated, the simulation of vibration caused by blasting should be carried out first. Generally, the material in a certain zone near the blasting center will undergo damage, so the physical model to simulate this region is the most concerned. In this paper, the damaged zone near blasting center is neglected, and the blasting load can be considered being applied on the interface between the damaged zone and undamaged zone. Regarding the relations between the weight of explosive, the size of damaged zone, and the dynamic loading to propagate out away, the vibration caused by blasting for a practical layered slope is simulated. Compared with the measured signal in site, it can be seen that the simulating result is in well agreement with that of practical testing. The results also indicate that the farther the testing point apart from the blasting center, the more accurate the simulation is.