Geophysical Research Abstracts
Vol. 20, EGU2018-11073, 2018
EGU General Assembly 2018

Acoutic emission pattern recognition approach based on Hilbert-Huang transform and K-means method for rock fracture monitoring

Xing Zhu, Yifei Zhou, and Wei Hu

State Key Laboratory of Geohazard Prevention and Geoenvironment Protection,Chengdu University of Technology, Chengdu, China (zhuxing_84@qq.com)

One of the most important chanlleges face by in situ rock landslide mointoring approaches when establishing a relationship between a specific damage mechanism and its acoustic signature is the lack of an appropriate acoustic signal processing method able to extract more useful information from the non-stationary acoustic signal. On the aim to investigate the pattern of acoustic signal associated with rock failure, the Hilbert-Huang transform (HHT) and K-means method are used for acoustic emission signal analysis and to help understanding the rock damage process. AE signal collected from rock sample under uniaxial loading condition were studied carefully. First, the time-frequency characteristics of the recorded signals in each test is analyzed based on the HHT method. Secondly, the relationship between rock fracture and AE signal and the precursory signal is studied exploratively through K-means approach.