APCOM & ISCM
11-14th December, 2013, Singapore

Advances in Computing of Landslide Problem

***Shuli Sun[1], Pu Chen[1], Xiangrong Fu[2], Kefu Huang[1], Qiguo Rong[1], Jie Sui[1], Qi Song[1], Nelson Lafontaine[3], Xiangrong Wang[1], and Mingwu Yuan[1]**

[1]Department of Mechanics and Engineering Science, College of Engineering, Peking University, Beijing, China
[2]College of Water Conservancy and Civil Engineering, China Agriculture University, Beijing, China
[3]International Center for Numerical Methods in Engineering (CIMNE), Barcelona, Spain

*Corresponding author: yuanmw@pku.edu.cn

Modeling and simulation of landside problem are usually tedious and time-consuming. A large scale geological body with fractured networks which consists of rock and soil is to be considered. The fractures may gradually extend due to gravity and interaction between solid and water, and material softening behavior of geological media often occurs after heavy rainfall. This paper summarizes some advances of our team in numerical simulation of landslide problem, mainly includes mesh generation of discrete fractured system and high efficient solution algorithm. Based on these studies, a prototype software package has been developed. The special features of this package are as follows: initial mesh generation for a two- and three-dimensional geological body with fractures and an adaptive meshing approach for fracture extension are available; material softening behavior of geological media is included by pseudo arc-length algorithm; parallel computing module is available for large scale problems with up to 20 million meshes.

Keywords: Landslide, Fractured network, Fracture extension, Pseudo arc-length algorithm, Parallel computing