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Maximum Impact Force Effects on Rock-Shed through the Movement of the Cluster Rockfall

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This research aims at the effects of the maximum impact force on the rock-shed which occur during the collision of rocks. The numerical DEM program (PFC3D 3.0) calibrated with small-scale physical experiment are used to simulate the movement of cluster of rockfall coupled with impact forces on the rock-shed. The preliminary results from small-scale experiments show that the maximum impact force is significantly affected by amount of rockfall mass, as well as the falling height and development process. A further full-scale numerical field case study not only confirms the experimental results, but also indicates that the influences caused by the fall type of rockfall and the contact stiffness between rock and rock-shed. The obtained results provide scientifically sound guidelines for futher research on rockfall issues and rock-shed structure design.

Keywords: cluster of rockfall, maximum impact force, rock-shed