

A RELATION BETWEEN CALCULATION ERROR AND MODELLING RESOLUTION OF DEM

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In this study, a relation between calculation error and modelling resolution in the DEM (Discrete Element Method) [1] simulation was investigated. In order to discuss the relation, firstly, a simple model test was conducted. In the model test, a small wooden block was rolled on a model slope, and the motion of the block was observed. The model test was conducted with enough number of trials to obtain the distributions of variables such as the running distance. Then, the model test was reproduced using DEM. In the DEM code used in this study, shape of an object is described by connecting the sphere elements. The object is described as rigid body in the simulations. In order to investigate an effect of modelling resolution, several numerical models with different modelling resolution were prepared. Based on the simulated results, just like the model test, we got the distributions of the variables for each numerical model (Fig.1). Finally, the differences between the experimental result and the simulated results were quantified, and degree of modelling resolution was described using two indexes. By using the quantified values, the relation between quantified calculation error and two indexes of the modelling resolution was analysed. Based on the obtained result, it was found that a criterion of modelling resolution can be described in a plane of the two indexes.

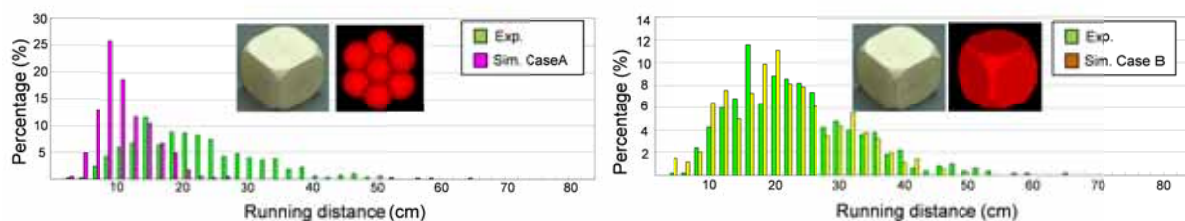


Figure 1. Histograms of running distance obtained from model test and simulations

REFERENCES

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