An Approach to Determine The Critical Time-Step in Discrete Element Modelling

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Abstract

The possibility of numerical modelling of the dynamic behaviour of particulate assemblies offered by the rapid increase in computer power has led to the development of relevant codes in Discrete Element (DE) Modelling. The inappropriate use and selection of time step for iteration cycles using trial and error methods in DE modelling has been leading to excessive computation time and data output as well as instability in computation in most cases. This study proposed, developed and ran trial tests on a new method which involved pre-determination of time step based on the well established behaviour of an elastic material. The method was found to be a useful tool and provided a better alternative to the commonly used methods.