Numerical Modeling in Geotechnical Earthquake Engineering: Predictive Capabilities

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ABSTRACT

Over the past two decades, numerical modeling using finite difference and finite element methods has gradually found a prominent place in geotechnical engineering practice. Today, many geotechnical engineers around the world use commercially available computer programs to assess the suitability of design alternatives for new facilities or to evaluate the performance of potential schemes for retrofitting existing geostructures.

The key question is: how reliable are these numerical tools? In this presentation the current state-of-the-art of numerical modeling of geotechnical systems is discussed and the issue of reliability of existing numerical tools will be addressed. A number of key geotechnical systems will be considered to demonstrate the strengths and weaknesses of existing methods and to point to the pitfalls that engineers may encounter while using these methods.