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ON INTEGRATED EARTHQUAKE SIMULATOR PROTOTYPE: COMBINATION OF NUMERICAL SIMULATION AND GEOGRAPHICAL INFORMATION SYSTEM

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More realistic simulation of a possible earthquake is crucial for making a rational counter plan against earthquake disaster. This paper proposes such a simulation system, called Integrated Earthquake Simulator (IES), which combines various numerical simulations of earthquake and structure behaviors with data stored in geographical information system (GIS). The key simulation of IES is to achieve high resolution of strong ground motion (SGM), even though some ambiguity remains in modeling the ground structures due to lack of available data. Examined is the validity of numerical simulation of SGM, which takes advantages of stochastic modeling of the ambiguity. Once high resolution of SGM is achieved, all structures within a target area are modeled by using the GIS data, such that a digital city is constructed in computer. Examples of such a digital city and its earthquake disasters are computed by using a prototype of IES.

Key Words: numerical simulation of earthquake, numerical computation of strong ground motion, dynamic analysis of structures, geographical information system

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