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**Simulation of strong ground motion. Earthquake scenario in the city of Heraklion**

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**Abstract**

In this work, we study a hypothetical earthquake scenario in the city of Heraklion, Greece. We start by considering a rectangular fault in a homogeneous elastic half-space environment. The mathematical model has been determined to describe the actual setting of an active fault.

The selected fault is one with no recorded activity, which is extended from the village of Vassilies to Agios Ioannis.

The propagation problem was mathematically described by the three-dimensional elastic wave equation with appropriate boundary conditions.

We address this problem using the three-dimensional discrete wavenumber representation method and generate synthetic seismograms at locations in the near-fault region. Realistic slip distributions and slip time functions are also considered.

A computer program developed in that context undertakes the generation process of the simulated seismograms for selected areas of interest, especially ones with unstable structures and buildings