Mechanic model of the earthquake excitation

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Abstrak

<i>The work presented in this thesis is divided two subjects. First, devoted to the behavior, mechanic model, simulation and analysis of plate tectonics under excitation force approximated. Approach of an Earthquake are assumptions on the nature of the rupture process, review the evidence for the essential importance of the flow under plate with the modes of deformations.

Earthquake is primarily a mechanical process which appears as genuire rupture of crust and the earth behaves as an elastic body during the short time span of the phenomena. The friction has probably a fundamental role in the mechanics of the earthquakes. Rock mechanicians consider an earthquake as a stick-slip event controlled by the friction properties of the fault.

During an earthquake, on the nature of the fault and on the effect of trapped fluids within the crust at seismogenic depth, fault zone head seismic waves are generated by a shear-dislocation source and then propagated through the modeled earth medium. Wave propagation theory is used to solve the problem at hand for wave motion response, which is found as the superposition of the mean and scattered wave response.

Second, devoted model of the wave propagation, an important modeling tool of fault zone properties at depth can be provided by accurate simulations of seismic fault zone head and trapped waves for realistic structures. Analytical solutions for seismic wave fields generated by double-couple sources at material discontinuities in plane-parallel structures. Extensive 2D studies of the dependency of fault zone wave motion on basic media properties and source receiver geometries show that there are significant trade offs between propagation distances along the structure, fault zone width, impedance contrasts, source location within.

And the most important applications of the theory of structural dynamics is in analyzing the response of the structures to ground shaking caused by an earthquake. The study for earthquake response of linear SDF systems to earthquake motions concerned the displacement, velocity and acceleration. Then we introduced the response spectrum concept, which is central to earthquake engineering, together with procedures to determine the peak response of systems directly from the response spectrum.</i>