

# KINEMATIC and DYNAMIC MODELS for EARTHQUAKE SOURCE CHARACTERIZATION

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Reviewed By : **Arjun Tiwari & Rahul Singh,**  
**4<sup>th</sup> Sem M.Sc.Tech(AGP), Department of Applied Geophysics,**  
**Indian School Of Mines Dhanbad, 826004 .**

## ABSTRACT

The occurrence of earthquake can be regarded as the release of tectonically accumulated stress through dynamic fault rupture. Given this the entire process of earthquake generation consists of tectonic loading, quasi-static rupture nucleation, dynamic rupture propagation and fault strength recovery. Earthquake Modeling has become a well developed research field. I am going to describe how earthquakes nucleate and arrest and also the appropriate parameters and description of fracture propagation. The source parameters, such as rupture characteristics, fault characteristics, stress drop, nucleation and arrestment etc., are very important terms to explain the earthquake models.

There are two types of explanation based on factors which are kinematic and dynamic characteristics. Radiation can be separated into two main components: a near field term responsible for the so called fling steps due to permanent, geodetic offsets; and the far field that produces pulse like motions. Almost all earthquake-sources images are merely kinematic representation of the rupture, but do not directly depict the other stresses and dynamical parameters that cause these motions on the fault. Kinematic source models are described on the basis of constant rise time, rupture velocity, boxcar slip-velocity function and rupture velocity etc. These models are easy to implement and computationally very efficient, however dynamic models specify initial stress distribution and friction law and useful to solve elasto-dynamic equations of motion.

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