# INVESTIGATING THE SOURCE SPECTRUM OF PSEUDO-DYNAMIC RUPTURE MODELS, DERIVED WITH 1-POINT AND 2-POINT STATISTICS

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The omega-square source spectrum has been widely used to describe the basic characteristics of earthquake source (Aki, 1967; Brune, 1970) and to represent the earthquake source effect in stochastic strong ground motion simulation (Boore, 1983; Atkinson and Boore, 2006). The study on the source spectrum has later been extended to finite fault source model (Bernard et al., 1996; Hisada, 2001). Recently, Song et al. (2014) and Song (2016) proposed a pseudo-dynamic source modeling method that considers not only the heterogeneity of main kinematic source parameters such as slip, rupture velocity and slip velocity, but also the correlation structure between them. They set up a probability model for earthquake rupture processes using 1-point and 2-point statistics of the three main source parameters and constructed a statistical input model by analyzing a number of spontaneous dynamics rupture models. In this study, we analyze the source spectrum characteristics of the pseudo-dynamic modeling method. First, we test whether the pseudo-dynamic source models follow the omega-square spectrum if the distribution of source parameters is homogeneous. Then, we analyze the effect of input source parameters on frequency spectrum characteristics. Our preliminary results show that the perturbation of rupture velocity may affect the low frequency band and the corner frequency of the spectrum while the perturbation of peak slip velocity may affect the high frequency band. We plan to extend the analysis further by investigating the effect of auto- and cross-correlations of the source parameters.