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Several issues revealed from benchmark tests for strong ground motion simulations (Part 1: Theoretical & Hybrid Methods)

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In this presentation in (Part 1), we will talk about the following three topics.

1. Summary on the important results from the benchmark tests of the theoretical methods, which carried out in 2011-2013 (Hisada, 2011, 2012; Matsumoto, 2013)
2. Various issues on the problems and techniques for the hybrid methods between the theoretical and stochastic methods in the combining periods (about 0.5 - 3 s), which are the most important periods for engineering structures.
3. New benchmark tests for predicting strong ground motions from large earthquakes along the Nankai trough and under the Kanto basin.

In (Part 2) and (Part 3), we will present the summary and new benchmark tests for the numerical and stochastic methods, respectively.

Keywords: strong ground motion simulation, benchmark tests, theoretical method, hybrid method, Large Earthquake on the Nankai Trough, Large Earthquake under the Kanto Basin

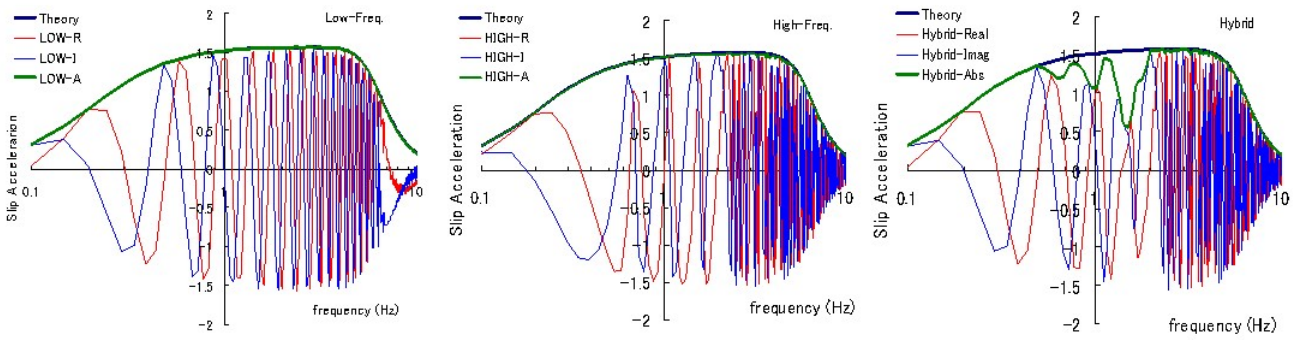

Figure 1: Fourier Amplitude Spectra of the omega-squared models using the three different phase spectra
Left: Zero Phases, Middle: Random Phases, Right: Hybrid using the two phases between 0.5 - 2 Hz