**Numerical Simulation of Train-induced Vibration in Consideration of Types of Excitation Forces**

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Vibration caused by the running trains sometimes raises environmental issues. Train-induced vibration is caused by moving static and dynamic axle loads. In a numerical simulation of train-induced vibration, the types of the excitation forces affect the responses of the relevant structure and the ground greatly. In this study, we evaluated the influence of the types of the excitation forces on the responses of the ground. From the numerical simulation, it was found out that in the frequency less than 31.5Hz a large part of the ground vibration caused by the moving excitation forces consists of averaged components like the moving static axle loads. On the other hand, it was found out that in the frequency more than 40Hz a large part of the ground vibration by moving excitation forces consists of varying components like dynamic axle loads. Furthermore, it was found out that there is a frequency, at which an accelerance of moving excitation forces is close to that of a point force excitation. We clarified that in that frequency the accelerance of the point force excitation can be used as a substitute for that of the moving excitation forces.