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Title: Implementation of artificial transmitting boundary in numerical simulation of wave motion

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关键词: 局部场地; 有限元法; 透射边界; 人工边界; ABAQUS软件

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摘要: 对局部场地动力反应的有限元方法及其边界问题的处理技术进行了研究.基于ABAQUS有限元软件开发了用于局部场地反应数值模拟的人工透射边界的子程序,通过对均匀半空间的波动问题的分析,验证了局部场地动力反应分析模型和边界处理技术的可行性.算例结果表明,基于ABAQUS有限元软件建立的地震波输入方式和透射边界的用户子程序对于局部场地动力反应分析具有良好的适用性.所提方法可用于二维局部不规则、不均匀和非线性场地的地震波散射问题.

Abstract: Numerical simulation of local site dynamic response was studied by finite element method considering on transmitting artificial boundary condition in this paper.A new program used for seismic response of two-dimension local uneven field is developed based on ABAQUS finite-element software.Wave motion problem of homogeneous half space was analyzed.It proves that the analysis

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model and boundary processing used in local site dynamic response developed in this paper are feasible. The user subroutine for transmitting boundary condition is excellent to solve the dynamic response by the simulation of the infinite field effect. The numerical examples show that the incident style of earthquake waves and the subroutine of transmitting boundary condition based on ABAQUS can be efficiently applied to local site dynamic analysis. The method can be applied to scattering of earthquake waves of 2-D irregular, uneven and nonlinear local site.

参考文献/REFERENCES