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Abstract ABSTRACT
This article applies the Newton’s second law to establish seven degrees of freedom ride model of automobile vibration on the stochastic road surface. The computer program for simulation the automobile vibration is written by MATLAB. The model contains the automobile body vertical, roll, and pitch vibrations as well as four wheels’ vertical vibrations. We first use the spatial frequency of spectrum density matrix to describe road surface irregularities that are the excitations of the four wheels. Then we transfer spectrum density matrix in the spatial frequency domain to the temporal frequency domain. Finally we use the frequency response function matrix to obtain the response of the automobile vibration. This article, that can predict automobile vibration in the stochastic road, may be used as a reference tool to improve comfortableness of automobile.
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