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Vibrations of Springboards: Mode Shape and Time Domain Analysis

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Abstract : Diving is an important Olympic sport. In this sport, the effective performance of the athlete is related to his capability to interact correctly with the springboard. In fact, the elevation of the jump and the correctness of the dive are influenced by the vibrations of the board. In this paper, the vibrations of the springboard will be analyzed by means of typical tools for vibration analysis: Firstly, a modal analysis will be done on two different models of the springboard, then, these two model and another one will be analyzed with a time analysis, done integrating the equations of motion od deformable bodies. All these analyses will be compared with experimental data measured on a real springboard by means of a 6-axis accelerometer; these measurements are aimed to assess the models proposed. The acquired data will be analyzed both in frequency domain and in time domain.

Keywords : springboard analysis, modal analysis, time domain analysis, vibrations
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