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Abstract

Structural and geotechnical engineers regularly use response spectra to assess the response of civil infrastructure to earthquakes; however, the underlying concepts of response spectra are often difficult for civil engineering students to grasp. Hardware specifications for two low cost response spectrum devices (RSDs) facilitate an inductive approach for teaching response spectrum concepts to students. The RSDs, which consist of wooden masses, compression springs, and accelerometers, can be excited manually or on a portable shake table to show the effects of mass and stiffness on the dynamic response of structures subjected to earthquake ground motion. Auxiliary Python scripts record real time accelerometer data, enabling students to compare the observed RSD response to numerical computations.

Keywords: Earthquake Engineering, Structural Dynamics, Inductive Learning, Desktop Learning Modules

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