STEADY STATE SOUND PRODUCTION AND INVESTIGATIONS ON CLASSIC GUITARS

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ABSTRACT

The discussion about the quality of a guitar goes back to the early days of this instrument. Because its growing popularity in the last decades numerous experiments and theoretical investigations have been published in order to better understand the instrument and to improve the quality of the tone production. The possibilities and tools to investigate the functionality and properties of a guitar have developed dramatically in recent years due to the application of fast and cheap computers. Mathematical procedures and modelling according to finite element methods allow to simulating any instrument. Here, a more practical approach is presented. The guitar is slightly modified to produce the sound in the very same way the string tension acts on the bridge. The guitar under test is agitated with steady state signals or, for range measurements, as sweep-sine or MLS signals. With these defined state signals, analysis is by far more easy to accomplish. Shown are comparative frequency response between famous old guitars and new models, influence of string tension and weight distribution, temperature and humidity. All results are verified by conventional analysis methods.