Apr 12th, 11:00 AM - 12:00 PM

Investigation of the Effect of Shaking the Front Plate of a Mandolin

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Oral Presentation O10.1

INVESTIGATION OF THE EFFECT OF SHAKING THE FRONT PLATE OF A MANDOLIN

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Like any vibrating object the front and back plate of a mandolin will have mode shapes and operating deflection shapes when vibrated. The goal of this project was to test whether or not shaking the front plate, a common practice by luthiers during construction, changes the operating deflection shapes that occur during the vibration of the front plate. Some luthiers claim that shaking the front plate during construction will actually break down some of the cellular structure in the wood causing the instrument to have a better sound, like a well-played mandolin. Using speckle pattern interferometry, the front plate of a mandolin was characterized during construction before and after it had been shaken. This data will also be compared to the analysis of the front and back plate of a student mandolin.