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Mechanical Features of Piano Hammer Felt

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Experimental testing of piano hammers, which consist of a wood core covered with several layers of compressed wool felt demonstrates, that all hammers have the hysteretic type of the force-compression characteristics. It is shown, that different mathematical hysteretic models can describe the dynamic behavior of the hammer felt. In addition to the four-parameter nonlinear hysteretic felt model, another new three-parameter hysteretic model was developed. The both models are based on the assumption that the hammer felt made of wool is a microstructured material possessing history-dependent properties. Both of the models are equivalent for the slow loading of the felt.

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