A parametric study on admittance signatures of PZT transducer under free vibration

Abstract

Piezoelectric material is proven to be a versatile collocated sensor and actuator. Its specific application includes electromechanical impedance (EMI)-based structural health monitoring (SHM). To date, several EMI models are available in the literature but parametric studies are scarcely available. This study aims at providing a parametric study on selected models, considering a freely vibrating piezoelectric transducer. The effect of varying mechanical and electrical parameters of the transducer on the admittance signatures was investigated. The theoretical results were compared against the experiments. Accuracy of the model was successfully refined upon model updating.