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Abstract

The dispersion of surface acoustic waves (SAWs) has long been studied for diverse applications ranging from seismic waves to microelectronic filters. In this work, we apply COMSOL Multiphysics software for the finite element investigation of SAW dispersion in two inhomogeneous materials: (a) layered structures, and (b) periodically patterned layered structures known as surface phononic crystals (PnCs). Using an eigenfrequency analysis, we parametrically solve for surface wave modes versus the wave number, $k(\lambda)$. In validation against experimental data, we have devised a post-processing method to rank the many computed modes according to likelihood of experimental detection.