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Experimental Demonstration of Dynamic Topological Pumping Across Incommensurate Bilayered Acoustic Metamaterials¹ WENTING CHENG, New Jersey Inst of Tech, EMIL PRODAN, Yeshiva University, CAMELIA PRODAN, New Jersey Inst of Tech — In this talk, we reported the first un-assisted dynamic energy transfer across a metamaterial, via pumping of such topological edge modes. The system is a topological aperiodic acoustic crystal, with a phason that can be fast and periodically driven in adiabatic cycles. The system is characterized experimentally by standard acoustic measurements, and via a finite element approach utilizing COMSOL Multiphysics. When one edge of the metamaterial is excited in a topological forbidden range of frequencies, a microphone placed at the other edge starts to pick up a signal as soon as the pumping process is set in motion. In contrast, the microphone picks no signal when the forbidden range of frequencies is non-topological. This study suggests possible applications of electron pumping in conventional insulators.

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