



# Imaging acoustic waves in 2D confined by hook or by crook

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This talk describes experiments and simulations on two different ways to confine surface acoustic waves in two-dimensions on microscopic scales: by the use of a surface phononic crystal cavity [1] or by the use of zero-group-velocity waves in a thin plate [2]. In the former case, a quasi-hexagonal cavity in a honeycomb-lattice surface phononic crystal formed in crystalline silicon is imaged by means of an ultrafast technique, and the acoustic energy confinement is quantified. In the latter case, Lamb waves are similarly imaged in a micron-scale thickness silicon-nitride plate coated with a titanium film. We discuss the dispersion relations and spatial localization in detail in these two cases. Applications include sensing and the testing of bonded nanostructures.

## References

- [1] P.H. Otsuka, R. Chinbe, M. Tomoda, O. Matsuda, Y. Tanaka, D.M. Profunser, S. Kim, H. Jeon, I.A. Veres, A.A. Maznev, O.B. Wright, (*unpublished*)
- [2] Q. Xie, S. Mezil, P.H. Otsuka, M. Tomoda, J. Laurent, O. Matsuda, Z. Shen, O.B. Wright, Nat. Comm. 10 (2019) 2228