

# AVVISO DI SEMINARIO

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## *Surface acoustic wave imaging in real space and $k$ -space*

Controlling sound is essential to a diverse range of applications. Periodic acoustic structures, known as phononic crystals, provide a versatile way to block, absorb or guide sound, and understanding their behaviour has been the focus of much research. The acoustic wavelength is chosen to be of similar order to the structure lattice constant, leading in particular to the formation of band gaps useful for manipulating sound. In parallel to this research effort, periodic and aperiodic acoustic structures formed of individual acoustic resonators, in which the acoustic wavelength is much smaller than the lattice constant, have been found to have similar as well as new functions and applications. Such structures, known as acoustic metamaterials, are now the subject of intensive investigations. Here we present a method based on ultrafast optics to visualize two-dimensional sound fields in both types structures, and to analyse their behaviour. We show in particular how one can watch surface-acoustic-wave evolution in both real- and  $k$ -space, the latter allowing the immediate appreciation of acoustic mode coupling.

**Giovedì 21 Maggio 2015 : ore 11.00**  
**Sala lettura del Dipartimento SBAI**

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