

The dynamical basis of the auditory function.

Marcelo Magnasco *

In this minicourse I shall review some recent developments in the theory of how hearing works. Hearing is an intrinsically dynamical sense – unlike vision or olfaction – detection of sound involves the mechanical amplification of vibrations by the cochlea, which makes the role of dynamical systems theory central to our understanding of how the ear works.

I will try to give an overall view, from the behaviour of the individual hair cells, the sensory cells which detect sound and convert it into nervous impulses, to the dynamical behaviour of the cochlea as a whole, and then to neural coding of sound up to primary cortex.

*The Abdus Salam ICTP, Strada Costiera 11, Trieste I-34014. On sabbatical leave from: Rockefeller University Box 212, 1230 York Avenue, NY NY10021.