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Guided surface waves on interfaces of media with positive and negative Poisson's ratio

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Surfaces and interfaces are waveguides for some kinds of waves. The Stoneley wave occurs on the interface of perfectly bonded isotropic elastic materials [1]. The kind of waves are of importance e.g in geoscience [2] and in the design of delay lines in acoustical waveguides [3]. Whereas the surface Rayleigh wave exists on all free surfaces of elastic media, the range of existence of the Stoneley waves is rather narrow. It will be shown how the use of auxetics, i.e. the materials with negative Poisson's ratio [4] enlarges this region. Qualitatively new guided waves arise if the media are separated by an interlayer. The case of a thin membrane will be discussed with an emphasis on long wavelength cut-offs. The systems under consideration admit a number of evanescent waves known as surface resonances or surface leaky waves [5].

- [1] R. Stoneley, Proc. Royal Society of London. Series A, 106, 416 (1924)
- [2] D. Rauch, Marine Science, 16, 623 (1986)
- [3] V.R. Velasco, Physical Status Solidi A, 60, K61, (1980)
- [4] R.S. Lakes, Science 235, 1038 (1987)
- [5] P. Sobieszczyk, M. Gałązka, P. Zieliński, Phase Transitions, 87, 1018 (2014)

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