

Preliminary analysis of Faraday waves under parametric excitation from a periodic substrate

Manuel Morocho-López^{1,2}, Mónica A. García-Ñustes^{2†}, Leonardo Gordillo³

¹Departamento de Física, Universidad Técnica Federico Santa María, Casilla 110-V, Valparaíso, Chile.

²Instituto de Física, Pontificia Universidad Católica de Valparaíso, Casilla 4059, Chile

³Departamento de Física, Universidad de Santiago de Chile.

*manuel.morocho@usm.cl, †monica.garcia@pucv.cl

Resumen

In this talk, we review the surface response of a vertical water cell subject to energy injection from a periodic substrate. We study the motion of an electron in a crystal lattice as we can consider a possible analogy between this system and the pattern formation of water response to a periodic substrate [1]. Based on Bloch's theorem, it can be demonstrated that the parameter space region for pattern formation shows a band-like structure, letting us establish adequate methodologies for analyzing our problem [2].

Referencias

- [1] Q. Wang, Y. Yun, and G. Miao, “The stability of the plane free surface of water in a vertical vibrated vessel with corrugated bottom,” *Ultrasonics*, vol. 44, pp. e1483–e1485, Dec. 2006, doi: 10.1016/j.ultras.2006.05.148.
- [2] V. V. Osipov and GarcíaN., “Space-time parametric excitation of localized standing waves on a surface of a fluid in a vessel with corrugated bottom,” *Physics Letters A*, vol. 283, no. 3–4, pp. 209–215, May 2001, doi: 10.1016/s0375-9601(01)00247-x.