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Strichartz type estimates and application to a 2D energy critical NLW in a bounded domain

In this work, we establish an appropriate 2D Strichartz type estimate for the linear wave equation set on a bounded domain with either Dirichlet or Neumann type boundary conditions. The proof follows Burq–Lebeau–Planchon work in 3D and solely based on spectral projection estimates due to Sogge. Our Strichart estimate enables us to solve the nonlinear problem with exponential nonlinearity. We define a trichotomy for the cauchy problem, prove the wellposedness on two sides of the trichotomy and a sort of instability on the the last side.

This is a joint work with R. Jrad.