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**Boundary value problems on non-Lipschitz uniform domains: Stability, compactness and the existence of optimal shapes**

The talk deals with second order PDE in variational formulation on rough domains. We discuss boundary value problems for families of confined uniform $(\varepsilon,\infty)$-domains with (possibly) fractal boundaries and present novel results on convergence, compactness, spectral continuity and the existence of energy minimizing shapes. Our focus is on mixed and Robin problems, they involve integrals with respect to (possibly) fractal measures on the boundaries. These types of problems are relevant in linear and nonlinear acoustics, and we briefly discuss related applications.

Joint with Anna Rozanova-Pierrat (CentraleSupélec) and Alexander Teplyaev (Univ. of Connecticut).