



M.A.P. Seminar

Mathematical Analysis and Probability

14 May 2025

11:30

Sala seminari — Collegio Puteano (Centro De Giorgi, SNS)

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Minimal surfaces, eigenvalues, and the second variation of energy

Abstract. Minimal surfaces in the 3-sphere have long been studied in differential geometry, with powerful tools from geometric analysis, spectral theory, and topology. A central open problem is Yau's conjecture, which posits that the first nonzero eigenvalue of the Laplace–Beltrami operator on a closed minimal surface in S^3 is exactly 2.

In this talk, we will survey well-known results on minimal surfaces in S^3 , emphasizing the interplay between curvature, area, and eigenvalues. Then, we will present new results arising from studying these surfaces via the second variation of the energy functional rather than by area alone.



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The organizers:

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