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The Plateau problem for wet films

Wednesday, 11 June 2025 14:30 (1h 30m)

In this course we introduce the formulation of the Plateau problem by Harrison and Pugh and discuss its connection with the theory of soap films and, in particular, with the derivation of Plateau laws. We then introduce the notions of “dry” and “wet” soap films, the notion of Plateau borders for wet soap films, and discuss the derivation of the resulting “wet Plateau laws” in the context of capillarity theory. Finally, we introduce a diffused interface version of this wet soap films model, a new class of free boundary problems arising as the Euler-Lagrange equations of these diffused models, and discuss various open problems. This course is based on a series of joint works with Camillo De Lellis, Francesco Girardin, Antonello Scardicchio, Salvatore Stuvard, Darren King, Michael Novack, and Daniel Restrepo.

Presenter: Prof. MAGGI, Francesco (University of Texas at Austin)