A Resolution of the Poisson Problem for Elastic Plates

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The Poisson problem consists in finding a surface immersed in the Euclidean space minimising Germain's elastic energy (known as Willmore energy in geometry) with assigned boundary, boundary Gauss map and area; it constitutes a non-linear model for the equilibrium state of thin, clamped elastic plates. We present a solution, and discuss its partial boundary regularity, to a variationally equivalent version of this problem when the boundary curve is simple and closed, as in the most classical version of the Plateau problem. This is a Joint work with F. Da Lio and T. Rivière.