Bern-Fribourg Graduate Seminar

a seminar for Master and PhD students

Thursday 21st November, 2024: 17:15 - 18:00

Room 2.52, Perolles 08, Fribourg

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An invitation to the Theory of Varifolds and its applications to the Plateau Problem

Abstract

The Plateau Problem can be informally formulated as follows: given a boundary Γ, find the smallest surface spanning it. This can be more rigorously written, using the formalism of Calculus of Variations, as the minimization problem of the "n-dimensional area functional" on the class of n-manifolds. Since this class does not allow the usage of standard topological tools for proving existence of minimizers, we relax both the notion of manifold and the notion of solution for the Plateau Problem. These "relaxed manifolds" are what we call "varifolds", and the class of those admits good compactness properties; in particular, we are allowed to use the Direct Method of Calculus of Variations in the "relaxed problem". Finally, we will see that the any varifold-solution of the Plateau Problem is (up to a small set) a regular manifold, hence a solution of the original problem.