

MINIMAL SURFACES IN METRIC SPACES

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The classical problem of Plateau is about the existence of an area minimizing disc spanning a given Jordan curve in Euclidean space. This problem has a long and rich history and admits many variations. In this series of lectures, I will discuss the existence and regularity of solutions to the classical problem of Plateau in Euclidean space and, more generally, in the setting of metric spaces. I will furthermore describe the intrinsic structure of area minimizing discs in metric spaces and outline applications to parametrization problems of metric surfaces and the geometry of metric spaces. The necessary background on metric space valued Sobolev maps will be provided. If time permits, I will also talk about the more general Douglas or Plateau-Douglas problem which asks to find an area minimizing surface of fixed or bounded genus spanning a given finite collection of Jordan curves.

Based on several joint works with Alexander Lytchak and also with Robert Young and Martin Fitzi.