
Surfaces in 4-manifolds

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Résumé

In this minicourse we will survey what is known about surfaces in 4-manifolds: their existence, their uniqueness, and their various properties. We will be especially interested in the question of when a given map of a surface to a 4-manifold is homotopic to a locally flat embedding. I will outline two fruitful approaches to this problem. The first is to use an analogue of Freedman's disc embedding theorem, generalised to arbitrary compact surfaces in joint work with Kasprowski, Powell, and Teichner. The second approach uses topological surgery theory, due to Freedman and Quinn.

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