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## COLLOQUIUM

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### Asymptotic behaviour of gradient flows

#### Abstract

Many interesting geometric objects are characterised as minimisers or critical points of natural geometric quantities such as the length of a curve, the area of a surface or the energy of a map.

If we want to deform a given geometric object in a way that is designed to change the initial object towards such an optimal state, it is hence natural to move in the direction of the negative gradient of the corresponding functional.

In this talk we will discuss some aspects of a well known geometric flow, the so called harmonic map flow, which is defined as the gradient flow of the Dirichlet energy  $E(u) = \frac{1}{2} \int_M |\nabla u|^2$ . We will in particular focus on the possible behaviour of solutions as time tends to infinity and the question of whether one can expect such a gradient flow to converge to a minimiser of the underlying energy.