MEAN CURVATURE FLOW IN HIGHER CODIMENSION AND ISOPERIMETRIC INEQUALITIES

FELIX SCHULZE

Abstract. We will discuss how weak mean curvature flow via elliptic regularisation can be used to prove that on a simply connected, complete manifold M with non-positive sectional curvatures the following isoperimetric inequality holds: Let Σ be a 2-dimensional closed integral current (or flat chain mod 2) with compact support in M. Let S be an area minimising integral 3-current (resp. flat chain mod 2) such that $\partial S = \Sigma$. Then $6\sqrt{\pi}M[S] \leq (M[\Sigma])^{3/2}$. We also obtain an optimal estimate in case the sectional curvatures of M are bounded from above by $-\kappa < 0$ and characterise the case of equality.

University College London