The isoperimetric inequality on a minimal surface

Abstract:
The isoperimetric inequality is one of the most fundamental results in geometry. A longstanding conjecture asserts that the sharp isoperimetric inequality should hold on any minimal surface in Euclidean space. This was confirmed by Carleman around 1920 for 2D minimal surfaces diffeomorphic to disks. Since then, various other partial results have been established by a number of authors (mainly pertaining to the 2D case). In this lecture, I will present a proof of this conjecture which works in any dimension and in co-dimension at most 2. Our proof also gives a sharp version of the Michael-Simon Sobolev inequality.

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