

Willmore surfaces in \mathbb{R}^3

When one considers a surface in \mathbb{R}^3 , the mean curvature quickly appears as a node of geometric insight, tying itself to isoperimetry, elasticity, and regularity. From it one can naturally build a quadratic energy linked with the elastic properties of the surface: the Willmore energy.

We will see how insights on Willmore informs our knowledge of the surface, and how its peculiar behavior generates rich and surprising phenomena for its critical points: noncompact bubbling. If time allows, we will also look at situations where the aforementioned knowledges can be applied, notably to GR, or the sphere eversion.