

Point-Singularities of Willmore Surfaces

When studying the compactness properties of a sequence of Willmore surfaces (or when studying the Willmore flow), one faces the issue of point-singularities appearing. At such points (called "branch points"), the immersive nature of the surface is lost. The goal of the talk will be to introduce techniques enabling the study of the solution to the Willmore equation near branch points. In particular, we will develop local asymptotic expansions for the immersion and the second fundamental form with the help of quantities called "residues", which are computed away from the singularity along enlacing curves. When these residues vanish, the immersion is smooth (although it remains branched). We will see that the residues behave well under weak-limiting process, and draw conclusions regarding the weak limit of a sequence of smooth Willmore immersions.

This is joint-work with Tristan Rivière from ETH (Zürich).