

Axel Wings: Tangent-point energies in arbitrary dimensions and symmetric critical surfaces.

Abstract: In this talk, we consider a definition of tangent-point energies based on embeddings $M \rightarrow \mathbb{R}^n$, where M is a compact, m -dimensional manifold. Tangent-point energies are mainly studied in the 1D case as knot energies. Previous works generalized these energies to higher dimensions using admissible subsets of \mathbb{R}^n as argument. A comparison shows that both definitions (subset/embedding) agree. Further, we investigate Fréchet differentiability on a certain function space. This space is tailored to its corresponding tangent-point energy. Finally, we consider surfaces in \mathbb{R}^3 and study the existence of symmetric critical surfaces. Exploiting that surfaces of genus 4 cannot fulfill two certain symmetries simultaneously, we show the existence of two distinct critical surfaces.