INTERPOLATING WITH MINIMAL SURFACES

Ildefonso Castro-Infantes

Minimal surfaces are an important topic in differential geometry. The theory of approximation by minimal surfaces has been developed producing an important amount of literature. On the other hand, in classic complex analysis, together with the approximation, there are interpolation results for holomorphic maps. The classical interpolation theorem of Weierstrass asserts that the values of an entire function may be prescribed on a discrete and closed subset of the Euclidean complex plane.

We present the first results in this line in the ambient of minimal surfaces.

Indeed, given a Riemann surface M and an integer $n \geq 3$. We prove on [1] that one may prescribe the values of a conformal minimal immersion $M \to \mathbb{R}^n$ on a discrete closed subset of M. Our result also ensures jet-interpolation of any given finite order. This allows for example to prescribe the values of the generalized Gauss map $M \to \mathbb{CP}^{n-1}$.

Furthermore, the interpolating immersions can be chosen to be complete, proper into $\mathbb{R}^n$ if the prescription of values is proper, and one-to-one if $n \geq 5$ and the prescription of values is one-to-one. We may also prescribe the flux map of the examples.

We present all these results in a more general form: for a big family of directed holomorphic immersions $M \to \mathbb{C}^n$, in particular null curves.

This is part of a joint work with Antonio Alarcón.

Referencias

[1] A. Alarcón, I. Castro-Infantes. *Interpolation by conformal minimal surfaces and directed holomorphic curves.* arXiv:1701.04379.

Departamento de Geometría y Topología.
University of Granada.
Granada (Spain).
icastroinfantes@ugr.es