

WORKSHOP ON SUBMANIFOLD THEORY AND GEOMETRIC ANALYSIS

UFSCAR, SÃO CARLOS, BRAZIL, AUGUST 05 – 09, 2019

TUESDAY- 9h - 9:50h -AUDITÓRIO DO DM

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May we find a minimal surface passing through fixed points?

ABSTRACT. Minimal surfaces are an important topic in differential geometry which is closely related to complex analysis. Motivated by the classical approximation theorems of Runge and Mergelyan, uniform approximation results by minimal surfaces have been studied producing an important amount of literature. On the other hand, it is also remarkable in complex analysis the classical interpolation theorem of Weierstrass. It asserts that the values of an entire function may be prescribed on a discrete and closed subset of the Euclidean complex plane. We would present in this talk the first results dealing with interpolation in the setting of minimal surfaces. Concretely, 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 $M \rightarrow \mathbb{R}^n$ on a discrete and closed subset of M . Our result also ensures jet-interpolation of given finite order and we may prescribe the flux map of the immersions. Furthermore, the interpolating immersions can be chosen to be complete, proper into \mathbb{R}^n if the prescribed values are proper, and one-to-one if $n \geq 5$ and the prescription of values is one-to-one. This is a joint work with Antonio Alarcón.

References:

- [1] A. Alarcón, I. Castro-Infantes. *Interpolation by conformal minimal surfaces and directed holomorphic curves.* *Analysis & PDE* 12-2 (2019), 561–604. DOI 10.2140/apde.2019.12.561

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