

1164-53-179

Antonio Lerario* (lerario@sissa.it), Trieste, Italy, and **Michele Stecconi**. *What is the degree of a smooth hypersurface?* Preliminary report.

Let Z be a smooth and compact hypersurface contained in a disk $D \hookrightarrow \mathbb{R}^n$. It is well known that Z can be approximated by an algebraic hypersurface, which is isotopic (and in particular diffeomorphic) to Z in the disk D . In this talk I will study the problem of giving an upper bound on the smallest degree of such algebraic approximation, in terms of the geometric data of Z (e.g. its reach and its diameter). To this end I will introduce a notion of condition number in the (infinite dimensional!) space of smooth functions and discuss a condition number theorem, relating it to the distance in the C^1 topology from the set of functions whose zero set is a singular hypersurface. The degree of the algebraic approximation can be bounded by this condition number. This is based on a joint work with Michele Stecconi, available at <https://arxiv.org/abs/2010.14553>. (Received January 18, 2021)