

Prof. Marco Radeschi

Universität Turin

Virtual isometric immersions, and applications

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Abstract: A folklore conjecture says that on a compact, simply connected manifold with $\text{Ric} > 0$ there is an explicit, affine inequality between the index of its embedded minimal hypersurfaces and their betti numbers.

I will discuss results in this regard, including joint work with Ricardo Mendes about proving the conjecture on compact symmetric spaces. The main technique of this work involves defining the concept of virtual immersion, in which extrinsic geometry still works as usual, except the second fundamental form is not necessarily symmetric anymore. In fact, we show that there are cases of virtual immersions whose second fundamental form is skew-symmetric, which happen to be particularly important in this context.

