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Department of Mathematics
University of Fribourg
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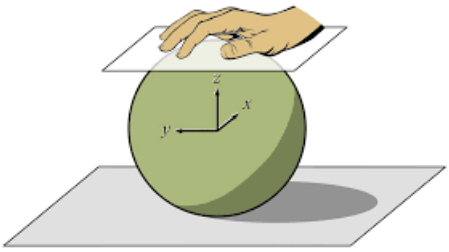

Enrico Le Donne (UniFR)

A subRiemannian viewpoint on a complex-analysis extension theorem

In this talk there will be a mix of complex analysis, metric geometry, and differential geometry.

The objective is to give a new point of view for the validity of Fefferman's mapping theorem from 1974. This result states that a biholomorphism between two smoothly bounded strictly pseudoconvex domains in $\mathbb{C}^n$ extends as a smooth diffeomorphism between their closures.

Following ideas from Gromov, Mostow, and Pansu, we discuss a method of proof in the context of quasi-conformal geometry. In particular, we show that every isometry between smoothly bounded strictly pseudoconvex domains is 1-quasi-conformal with respect to the sub-Riemannian distance defined by the Levi form on the boundaries. Subsequently, a PDE argument shows that such maps are smooth. This method was proposed by M. Cowling, and it has been implemented in collaboration with L. Capogna, G. Citti, and A. Ottazzi.