Geometry Webinar AmSur/AmSul

The width of curves in Riemannian manifolds

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22/09/2023 - sexta-feira
14:00 - Online

Resumo: In this talk we develop a Morse-Lusternik-Schnirelmann theory for the distance between two points of a smoothly embedded circle in a complete Riemannian manifold. This theory suggests very naturally a definition of width that generalises the classical definition of the width of plane curves. Pairs of points of the circle realising the width bound one or more minimising geodesics that intersect the curve in special configurations. When the circle bounds a totally convex disc, we classify the possible configurations under a further geometric condition. We also present properties and characterisations of curves that can be regarded as the Riemannian analogues of plane curves of constant width. This talk is based on a joint work with Lucas Ambrozio (IMPA) and Roney Santos (UFC).