Curvature, area and radius estimates for H-surfaces in Riemannian 3-manifolds

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Resumo/Abstract:

This is a course on the geometry of surfaces of constant mean curvature $H \ge 0$ in Riemannian 3-manifolds; these special surfaces are called *H*-surfaces. The first material covered concerns joint work of the first author with Giuseppe Tinaglia, which includes the existence of curvature and radius estimates for (H > 0)-disks embedded in R^3 , with one of the main results being that a complete simply connected (H > 0)-surface embedded in R^3 is a round sphere. The second material covered concerns joint work of the first author with Pablo Mira, Joaquin Perez and Antonio Ros of the classification of *H*-spheres in any homogenous 3-manifold *X*, with one of the main results being that two *H*-spheres in *X* with the same mean curvature differ by an isometry of *X*.

Pré-requisitos: The only prerequisite is a familiarity with basic surface geometry in R^3 and the beginning theory of Riemannian manifolds. Therefore, graduate students who have taken a graduate level course in Differential Geometry should be sufficiently prepared for the lectures.