Universidade Federal de São Carlos
Departamento de Matemática

Seminários de Geometria de São Carlos

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Falará sobre

Elliptic Weingarten surfaces in $\mathbb{R}^3$ with convex planar boundary

A surface Σ immersed in $\mathbb{R}^3$ is an elliptic Weingarten surface if its principal curvatures k_1 and k_2 satisfy an equation of the type $W(k_1, k_2) = 0$, for some function $W : \mathbb{R}^2 \to \mathbb{R}$ of class C^1 such that $\frac{\partial W}{\partial k_1}\frac{\partial W}{\partial k_2} > 0$ on $W^{-1}(\{0\})$. Known examples of elliptic Weingarten surfaces include minimal and constant mean curvature surfaces, and surfaces of positive constant gaussian curvature.
In 1996 A. Ros and H. Rosenberg proved that for a strictly convex curve $\Gamma \subset \{z = 0\} \subset \mathbb{R}^3$, there exists a constant h depending only on the curve Γ such that any compact surface embedded in $\mathbb{R}^3_+ := \{z \geq 0\}$ with constant mean curvature $H \leq h$ must be topologically a closed disk.
In this talk we will present a generalization of Ros-Rosenberg Theorem for elliptic Weingarten surfaces in $\mathbb{R}^3$, discussing its proof, which is based on some geometric analysis techniques as the Maximum Principle and the Alexandrov Reflection Method, and the recent classification of elliptic Weingarten surfaces of revolution obtained by I. Fernandez and P. Mira.
This is a joint work with B. Nelli (UNIVAQ) and G. Pipoli (UNIVAQ).

Data: 21 de março de 2024
Horário: 10h
Local: Auditório do DM