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SEMINÁRIO DE GEOMETRIA

Dia 20 de Janeiro (sexta-feira), às 14H00, sala 6.2.33

Surfaces in \mathbb{R}^7 obtained from harmonic maps in S^6

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Abstract:

We will investigate the local geometry of surfaces in \mathbb{R}^7 associated to harmonic maps from a Riemann surface Σ into the nearly Kähler 6-sphere S^6 . In this setting, the harmonicity of a smooth map $\varphi: \Sigma \rightarrow S^6$ amounts to the closeness of the differential 1-form $\omega = \varphi \times *d\varphi$, where \times stands for the 7-dimensional cross product. This means that we can integrate on simply-connected domains in order to obtain a map $F: \Sigma \rightarrow \mathbb{R}^7$. By applying methods based on the use of harmonic sequences, we will characterize the conformal harmonic immersions $\varphi: \Sigma \rightarrow S^6$ whose associated immersions $F: \Sigma \rightarrow \mathbb{R}^7$ belong to certain remarkable classes of surfaces, namely: minimal surfaces in hyperspheres; surfaces with parallel mean curvature vector field; pseudo-umbilical surfaces.

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