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Mês de: Novembro 2009

SEMINÁRIO DE GEOMETRIA

Dia 20 de Novembro (sexta-feira), às 16h, na Sala B3-01

"Constrained Willmore Surfaces Symmetries of a Möbius Invariant Integrable System"

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(CMAF)

Abstract:

These talks are dedicated to the class of constrained Willmore surfaces [in spaceforms], the generalization of Willmore surfaces that arises when we consider extremals of the Willmore functional with respect to *infinitesimally conformal* variations, rather than with respect to all variations. Constrained Willmore surfaces form a Möbius invariant class of surfaces with strong links to the theory of integrable systems, admitting a spectral deformation, defined by the action of a loop of at metric connections; *Bäcklund transformations*, defined by applying a dressing action; and, in 4-space, *Darboux transformations*, based on the solution of a Riccati equation. All these transformations are closely related and all [those corresponding to the zero *multiplier*] preserve the class of Willmore surfaces. For special choices of parameters, both spectral deformation and Bäcklund transformation preserve the class of constrained Willmore surfaces admitting a *conserved quantity*, and, in particular, the class of CMC surfaces in 3-dimensional space-form.

- part I -

In this first talk, we present a conformally invariant formulation of the Willmore energy and, in this way, establish the class of constrained Willmore surfaces as Möbius invariant. We characterize constrained Willmore surfaces in terms of the *constrained harmonicity* of the central sphere congruence. This will enable us to define a spectral deformation and a Bäcklund transformation of constrained Willmore surfaces.

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