Genuine infinitesimal bendings of Euclidean submanifolds

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"In this talk we focus on a notion of bending of a submanifold. This notion is associated to variations of a submanifold by immersions that preserve lengths "up to the first order". More precisely, an infinitesimal bending of an isometric immersion $f\colon M^n \to \mathbb{R}^{n+p}$ is the variational vector field associated to a variation of $f = f_0$ by immersions f_t whose induced metrics g_t satisfy $g_t'(0) = 0$.

We give a description of the complete Euclidean hypersurfaces that admit non-trivial infinitesimal bendings. We also present some results concerning genuine infinitesimal bendings of submanifolds in low codimension. That an infinitesimal bending is genuine means that it is not determined by an infinitesimal bending of a submanifold of larger dimension. We show that a strong local condition for a submanifold to be genuinely infinitesimally bendable is to be ruled and we estimate the dimension of the rulings. Finally, we describe the situation for infinitesimal bendings of compact submanifolds in codimension 2.

This is a joint work with M. Dajczer."

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