

LOOPS OF LEGENDRIANS IN CONTACT 3-FOLDS.

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ABSTRACT. The theory of Legendrian submanifolds plays a central role in Contact Topology. In this talk we focus our attention in the 3-dimensional case, more specifically in the contact manifolds $(\mathbb{R}^3, \xi_{\text{std}})$ and $(\mathbb{S}^3, \xi_{\text{std}})$ (or any contact 3-fold (M, ξ) in which the Euler class of ξ is zero).

The starting point is the introduction of the so called classical invariants of Legendrian submanifolds. It turns out that these invariants are actually formal invariants. Following the formal viewpoint we are able to introduce new invariants for loops of Legendrian submanifolds. As an application we show that the natural action of the group $\text{Cont}(\mathbb{S}^3, \xi_{\text{std}})$ in the space of Legendrians of $(\mathbb{S}^3, \xi_{\text{std}})$ induces a homotopy injection on certain connected components. This allows us to exhibit new examples of non trivial loops of Legendrians which are trivial in the smooth category.

This is a joint work with Francisco Javier Martínez-Aguinaga (ICMAT-UCM) and Francisco Presas (ICMAT).