

CHEN-WILLMORE SUBMANIFOLDS SHAPED ON CLOSED GENERALIZED ELASTICAE

Oscar J. GARAY¹

Dedicated to Bang-Yen Chen

Abstract

In this survey we review some recent results on Willmore surfaces and Chen-Willmore submanifolds. We first show how they are related to important models in the theory of elastic surfaces and membranes and show the strong connection between elastic curves in 2-dimensional space forms and the critical points of the elastic energy. Then, we will describe how the conformal invariance of the Chen-Willmore energy along with the Palais' symmetric criticality principle can be used in order to produce effective methods for the construction of Chen-Willmore submanifolds.

2000 *Math. Subject Classification*: Primary: 53A35; Secondary: 53B20, 58E99, 53C50, 53C80, 74K10, 74K15.

Keywords : Curvature energy functionals, generalized elastic curves, variation formulas, hyperbolic plane, generalized membranes.

¹Supported by grants GIC07/58-IT-256-07 of Gobierno Vasco and MTM2007-61990 of Ministerio de Educación y Ciencia. Spain
Departamento de Matemáticas, Universidad del País Vasco, Facultad de Ciencia y Tecnología, Apto 644, 48080, Bilbao, Spain, *Email address*: oscarj.garay@ehu.edu