

STRUCTURALLY STABLE CONFIGURATIONS OF LINES OF MEAN CURVATURE AND UMBILIC POINTS ON SURFACES IMMERSSED IN $\mathbb{R}^3$

RONALDO GARCIA AND JORGE SOTOMAYOR

Abstract

In this paper we study the pairs of orthogonal foliations on oriented surfaces immersed in $\mathbb{R}^3$ whose singularities and leaves are, respectively, the *umbilic points* and the lines of normal mean curvature of the immersion. Along these lines the immersions bend in $\mathbb{R}^3$ according to their normal mean curvature. By analogy with the closely related Principal Curvature Configurations studied in [S-G], [GS2], whose lines produce the extremal *normal curvature* for the immersion, the pair of foliations by lines of normal mean curvature and umbilics, assembled together, are called Mean Curvature Configurations. This paper studies the stable and generic cases of umbilic points and mean curvature cycles, with their Poincaré map. This provides two of the essential local ingredients to establish sufficient conditions for *mean curvature structural stability*, the analog of *principal curvature structural stability*, [S-G], [GS2].

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