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Relaxed Hyperelastic Line on an Oriented Surface

We derive a differential equation together with boundary conditions for a relaxed hyperelastic line on an oriented surface. Then we show that geodesics on plane and sphere are relaxed hyperelastic line.

[1] Arroyo, J., Garay, O. J., Closed Free Hyperelastic Curves in the Hyperbolic Plane and Chen-Willmore Rotational Hypersurfaces, Israel Journal of Mathematics 138 (2003) $171 - 187$.

[2] Arroyo, J., Garay, O. J., Mencía, J. J., Closed Generalized Elastic Curves in $S^2(1)$, Journal of Geometry and Physics 48 (2003) $339 - 353$.

[3] Manning, G. S., Relaxed Elastic Line on a Curved Surface, Quart. Appl. Math. 45 (1987) $515 - 527$.

[4] Nickerson, H. K., Manning, G. S., Intrinsic Equations for a Relaxed Elastic Line on an Oriented Surface, Geometriae Dedicata 27 (1988) $127 - 136$.

[5] O'Neill, B., Elementary Differential Geometry Second Edition, Academic Press, Inc., New York, 1997.

[6] Weinstock, R., Calculus of Variations with Applications to Physics and Engineering, McGraw-Hill Book Company Inc.,1952.