

TGTC 2020: TITLE AND ABSTRACT

Invariant Surfaces in \mathbb{S}^3 based on Generalized Elastic Curves

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Abstract: We introduce a family of curvature energy functionals acting on planar curves of \mathbb{S}^3 which extend the classical notion of elastic curves. Critical curves of this family, usually referred as p-elastic curves, generalize other interesting families of curves such as critical curves of a functional studied by Blaschke.

Next, using these critical curves as generators, we describe two constructions of invariant surfaces in \mathbb{S}^3 , binormal evolution surfaces and Hopf tori, which give rise to rotational linear Weingarten surfaces and closed tori critical for p-Willmore energies, respectively.

Finally, some properties of the critical generating curves are used to obtain results about the invariant surfaces.