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Material symmetry and chirality in nonlinearly elastic rods. (English) Zbl 1090.74610
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This article deals with certain classes of symmetry in straight nonlinearly elastic rods in the presence of a uniform helical microstructure. The author imposes some symmetries in the energy functional of a thin elastic rod. Under the symmetries, he expands it to obtain a quadratic energy functional so that he considers distinction between ‘hemitropic’ and isotropic rods. He states that the hemitropic symmetry causes a coupling between extension and twist of the rod. Using the quadratic energy functionals, he investigates dihedral-helical symmetry of rods.

Reviewer: Shigeki Matsutani (Kanagawa)

MSC:

74K10 Rods (beams, columns, shafts, arches, rings, etc.)
74G65 Energy minimization in equilibrium problems in solid mechanics

Cited in **3** Reviews
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Keywords:

elastic rods; handedness; quadratic energy functionals; dihedral-helical symmetry

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