

عنوان مقاله:

A neo-Hookean cylindrical tube with torsional eigenstrain

محل انتشار:

هشتمین کنفرانس ملی پژوهشهای کاربردی در مهندسی برق، مکانیک و مکاترونیک (سال: 1403)

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خلاصه مقاله:

In this research, the residual stress field caused by an inclusion in a cylindrical tube composed of an incompressible neo-Hookean material is addressed. The inclusion region is supposed to have a symmetric torsional eigenstrain distribution. Since the initial body is not stress-free, a material manifold, with Riemannian geometry, on which the configuration is stress-free is first made. Then, embedding this configuration in Euclidean space, the residual stresses are obtained. Moreover, the twist angle and stretch of the tube due to the inclusion region are found and compared with those in the inclusion problem in a solid cylinder.

کلمات کلیدی:

cylindrical tube, torsional eigenstrain, residual stress, neo-Hookean solid, material manifold

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