Torsionally loaded bucking of circular plates with single eccentric hole using the Trefftz method

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Abstract

This paper presents a numerical model to investigate torsionally loaded buckling of a circular plate with eccentric hole using the Trefftz method. In this paper, the circular plate is regarded as thin plate and the torsional loads exerting at the circular plate with eccentric hole are applied along the edges of the circular plate, where the torsional loads are in self-equilibrium. During the past several decades, the Trefftz method has been developed and applied to a wide variety of boundary value problems. In order to obtain the critical loads and buckling modes, eigenvalue problem will be performed. Numerical investigations of a torsionally loaded circular plate with various single eccentric holes will be demonstrated to see the torsional buckling behaviors of the circulatr plate by using the Trefftz method.

Keywords: buckling, circular plate, the Trefftz method, torsional load.