Analysis of the flexural vibration of ship’s tail shaft by transfer matrix method(PDF)

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Title: Analysis of the flexural vibration of ship’s tail shaft by transfer matrix method

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摘要: A ship’s tail shaft has serious flexural vibration due to the cantilevered nature of the propeller’s blades. Analysis of the nature frequency of flexural vibration is vital to be able to provide effective shock absorption for a ship’s tail shaft. A mathematic model of tail shaft flexural vibrations was built using the transfer matrix method. The nature frequency of flexural vibration for an electrically propelled ship’s tail shaft was then analyzed, and an effective method for calculating it was proposed: a genetic algorithm (GA), which calculates the nature frequency of vibration of a system. Sample calculations, with comparisons by the Prohl method under conditions bearing isotropic support, showed this method to be practical. It should have significant impact on engineering design theory.

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