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Spatial Behaviour for the Harmonic Vibrations in Plates of Kirchhoff Type

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Abstract: In this paper the spatial behaviour of the steady-state solutions for an equation of Kirchhoff type describing the motion of thin plates is investigated. Growth and decay estimates are established associating some appropriate cross-sectional line and area integral measures with the amplitude of the harmonic vibrations, provided the excited frequency is lower than a certain critical value. The method of proof is based on a second-order differential inequality leading to an alternative of Phragmèn-Lindelöf type in terms of an area measure of the amplitude in question. The critical frequency is individuated by using some Wirtinger and Knowles inequalities.

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