

**AN ANALYSIS OF THE DYNAMIC REGIME OF HYDRODYNAMIC WAVE
JOURNAL BEARINGS**

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ABSTRACT

The purpose of this paper is to study the dynamic regime of hydrodynamic wave journal bearings. A wave journal bearing features a wave inner bearing diameter on the nonrotating bearing side. In order to evaluate the unsteady pressure distribution, the Reynolds equation is integrated using a perturbation procedure. The journal trajectory is determined by solving the nonlinear equations of motion with the Runge Kutta method. The performance of the wave bearing is compared to the performance of a circular bearing. The effect of the wave amplitude on the speed limit at which the bearing is still stable is also investigated.

Keywords: wave bearing, stability, trajectory