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Slip flow in the gas-lubricated Rayleigh step-slider bearing. (English) Zbl 1195.76162
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Summary: Singular perturbation methods are applied to analyse the isothermal operation of the Rayleigh step slider bearing of narrow geometry, when the bearing number is moderate and the gas lubricant is rarefied, so that 'slip flow' occurs. Approximations to the pressure field and load-carrying capacity of such a bearing are obtained; and the influence of step geometry and degree of slip on those quantities is discussed.

MSC:

76D08 Lubrication theory

Keywords:

Rayleigh step bearing; slip flow; singular perturbations

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