# Partial Differential Equations Method to Analyze Nonlinear Resilience Force in a Long Clearance Seal and Rotor's Dynamics.

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ABSTRACT. The authors have developed a method of calculating the non-linear elastic force that arises in the clearance seal of a finite length. The authors have analyzed the force impact on the dynamics of the rotor of a centrifugal machine. In this work authors studied impact of nonlinear hydrostatic force in an arbitrary long seal, opposite to the previous literature where this force assumed to be linear, and seals are short (e.g. the ratio of the length of the clearance seal to the seal's radius is less than 0.5).