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ON AN UNSYMMETRIC EIGENVALUE PROBLEM GOVERNING FREE VIBRATIONS OF FLUID-SOLID STRUCTURES*

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Abstract. In this paper we consider an unsymmetric eigenvalue problem occurring in fluid-solid vibrations. We present some properties of this eigenvalue problem and a Rayleigh functional which allows for a min-max-characterization. With this Rayleigh functional the one-sided Rayleigh functional iteration converges cubically, and a Jacobi-Davidson-type method improves the local and global convergence properties.

Key words. eigenvalue, variational characterization, minmax principle, fluid-solid interaction, Rayleigh quotient iteration, Jacobi-Davidson method

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