

LEFT-DEFINITE STURM-LIOUVILLE PROBLEMS

A ZETTL

zettl@math.niu.edu

Department of Mathematical Sciences

Northern Illinois University

Dekalb

Illinois 60115, USA

Left-Definite, regular or singular, self-adjoint Sturm-Liouville problems with separated or coupled boundary conditions are discussed. Inequalities among the eigenvalues for different boundary conditions are established: these yield an elementary (without operator theory) proof of the existence of eigenvalues for coupled boundary conditions, an algorithm for their numerical computation as well as an asymptotic formula for them.