

Eigenvalues of rank one perturbations of matrices

A.C.M. Ran

The talk is concerned with the effects that rank one perturbations have on the eigenvalues of matrices, including Jordan structure. Many results concerning this problem are known, and in the talk we shall give an overview of existing results for matrices that have no special structure. Several new results will be mentioned as well.

The topic will be motivated by a practical problem, originating from systems and control theory. We shall show that the new results mentioned above might have impact on the design of a controller that stabilizes the system based on dynamic output feedback.

The talk is closely related to the lecture of Chr. Mehl in the session on matrices in indefinite inner product spaces, in which surprising results are presented for the case where the matrix has some structure.

The talk is based on joint work with Chr. Mehl, V. Mehrmann, L. Rodman, and on joint work with M. Wojtylak.