ELA

ON A CLASSIC EXAMPLE IN THE NONNEGATIVE INVERSE EIGENVALUE PROBLEM[*]

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Abstract. This paper presents a construction of nonnegative matrices with nonzero spectrum $\tau = (3 + t, 3 - t, -2, -2, -2)$ for $t > 0$. The result presented gives a constructive proof of a result of Boyle and Handelman in this special case. This example exhibits a surprisingly fast convergence of the spectral gap of τ to zero as a function of the number of zeros that are added to the spectrum.

Key words. Nonnegative matrices, Nonnegative inverse eigenvalue problem, Spectral Gap, Companion Matrices.

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