

Construction of maximal invariant subspaces for the classes of H -expansive matrices

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We considered indefinite inner products given by a square real invertible symmetric matrix $H = H^T : [x, y] = (Hx, y)$. On the Euclidean space equipped with this indefinite inner product, we consider matrices A for which $A^*HA - H$ is nonnegative. Such matrices are called H -expansive matrices.

We are interested in the construction of complex (as well as real) A -invariant maximal H -nonnegative subspaces. The complex case has already been shown if one uses a suitable Cayley transform. The problem arises when A is real and $A^T HA - H$ is nonnegative and A has both 1 and -1 as eigenvalues.