

On the solvability of the Yakubovich minimization problem

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Abstract

The Yakubovich Frequency Theorem, in its periodic and in its general nonautonomous extension, establishes conditions which result to be equivalent to the global solvability of a minimization problem of infinite horizon type, given by an integral of a quadratic functional subject to a control system. The solvability of the minimization problem is formulated in terms of the property of a corresponding linear Hamiltonian systems associated to the problem. In the talk, some conditions under which the problem is partially solvable are presented ; moreover the set of initial data for which the minimum exists is characterized and the values of the minimum as well of the minimizing pair are provided. In the analysis result to be fundamental the occurrence of an exponential dichotomy and the null character of the rotation number for the corresponding linear nonautonomous Hamiltonian system.

Joint work with Carmen Núñez.