BRIEF SUMMARY ON THE MIXTURE OF CONTROL THEORY AND SPECTRAL THEORY

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Abstract. Let us consider the linear ODE system

$$\dot{x} = A(t)x. \tag{1}$$

A classical control system is described by

$$\left\{\begin{array}{rcl} \dot{x} & = & A(t)x + B(t)u(t) \\ \\ y(t) & = & C(t)x(t) \end{array}\right. \tag{2}$$

where the *plant* is described by the linear system (1), $B(t) \in M_{np}(\mathbb{R})$ and $C(t) \in M_{mn}(\mathbb{R})$. The essentially bounded function $t \mapsto u(t) \in \mathbb{R}^p$ is known as an *input* of the system and the function $t \mapsto y(t) \in \mathbb{R}^m$ is the *output* available of the system.

In this presentation, motivated by the articles [1, 2, 3] we will explain some important concepts in control theory, such as controllability, stabilizability and assignability, which are strongly related to the spectral theory of exponential dichotomy and stability theory.

Based on the above, some guidelines about my research work will be indicated.

References

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[2] M. Ikeda, H. Maeda, S. Kodama. Stabilization of linear systems, SIAM J. Control, 10: 716–729, 1972.
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