Stability analysis of Wentzell problems

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Abstract: In this work, the uniform stabilization of some hyperbolic system with Wentzell boundary conditions is considered, and the uniform energy decay rate for the problem is established by considering both internal localized damping and boundary feedback. The exponential stabilization is attained by constructing a new multiplier and using multiplier methods.

Keywords: Wentzell conditions, uniform stabilization, internal damping.

Mathematics Subject Classification: 35Q60, 93D15, 93C20

Main results

The main purpose of this work is to determine how much dissipation is needed and where should it be placed. Motivated by the above work, we intend to investigate (0:1)) and establish exponential decay result, i.e., explicit energy decay rates.

References

[1] Kasri, H., & Heminna, A. Exponential stability of a coupled system with Wentzell conditions, Evol Equt and Control Theo, 5 , 235–250, 2016.

[2] Kasri, H., & Heminna, A. On the exponential stabilization of the electromagneto-elastic system with Wentzell conditions, Math Meth Appl Sci, 40 (18), 1–17, 2017.

[3] Kasri, H. Stabilisation exponentielle de problèmes de Wentzell, 13, Editions universitaires europeennes, Riga, 2018.

[4] Komornik, V. Exact Controllability and Stabilization, the Multiplier Method, RAM 36, Masson, Paris, 1994.

[5] Wentzell, A. D. On boundary conditions for multi-dimensional diffusion processes, Theor. Probab. Appl, 4 , 164–177, 1959.