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Title. Interacting flexible structures with localized strong damping: Semigroup stability and regularity.

Abstract. Thanks, first to a conjecture of Goong Chen and David Russell (1982), then to results of Roberto Triggiani and Shuping Chen (1989, 1990), responding to that conjecture, it has been known since the late eighties that the Euler-Bernoulli plate with structural or Kelvin-Voigt damping exhibits an analytic and exponentially stable semigroup. Then came the natural question: What happens to these semigroup properties when the structural or Kelvin-Voigt damping is localized? In the late nineties, Kangsheng Liu and Zhuangyi Liu (1998) showed that the semigroup corresponding to an Euler-Bernoulli beam with localized Kelvin-Voigt damping is exponentially stable, but not analytic; in the same paper, those authors proved that the string equation with localized Kelvin-Voigt damping is not exponentially stable when the damping coefficient is discontinuous. In this talk, I'll give a brief historical account of what is known in this framework, then share recent findings with my collaborators Irena Lasiecka (case of Euler-Bernoulli plate with localized structural or Kelvin-Voigt damping), and Kaïs Ammari, Fathi Hassine and Souleymane Kadri Harouna (case of coupled wave equations with localized singular Kelvin-Voigt damping).