THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

M. E. Taylor Analysis and PDE Seminar

October 11, 2023
3:30 - 4:30 p.m.
Phillips Hall 385

Unbounded damped waves: backward uniqueness and polynomial stability

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Abstract. In this talk, we discuss the wave semigroup with an unbounded damping. In such a setting, there are explicit examples where the linear damped waves would go into finite-time extinction. We will then find an optimal condition explicitly on the unboundedness to guarantee that the finite-time extinction cannot happen. We will also develop powerful yet flexible control-theoretic tools to establish novel polynomial stability and energy decay results for a variety of damped wave-like systems, including the linearised gravity water waves, Euler—Bernoulli beams, and Kelvin—Voigt damping.