



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

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## Analysis and PDE Seminar

November 16, 2022

3:00 - 4:00 p.m.

PH 385

### Exponential time-decay for a one dimensional wave equation with coefficients of bounded variation

Jacob Shapiro (University of Dayton)

**Abstract.** We consider the initial-value problem for the one-dimensional wave equation with coefficients that are positive, constant outside of an interval, and have bounded variation (BV). Under the assumption of compact support of the initial data, we prove that the local energy decays exponentially fast in time, and provide the explicit constant to which the solution converges. The key ingredient of the proof is a high frequency resolvent estimate for an associated Helmholtz operator with a BV potential. This is joint work with Kiril Datchev.