

TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

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Existence of solutions past collisions in nonlinear viscoelastodynamics

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Abstract: In this talk, we will consider the time evolution of a viscoelastic solid within a framework that allows for collisions and self-contact. In the static and quasi-static regimes, corresponding existence results have been shown through variational descriptions of the problem. For the fully dynamical case, however, collisions have so far either been ignored or a priori excluded via the inclusion of repulsive terms in the model. In contrast to this, using a newly developed variational technique for general PDEs of a similar type, we are able to treat inertial effects and prove the existence of solutions for arbitrary times. These solutions obey conservation of momentum and satisfy an energy inequality.