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Kevin T Andrews* (andrews@oakland.edu), Kevin T. Andrews, Department of Mathematics and Statistics, Oakland University, Rochester, MI 48309-4485, and **M. Shillor** and **S. Wright**. *A Dynamic Thermoviscoelastic Model for Grinding*. Preliminary report.

We construct and investigate a mathematical model for the dynamic thermomechanical process of grinding of a metallic workpiece, where both the grinding wheel and the workpiece are assumed to be viscoelastic. The frictional contact is modeled using general contact and friction laws which include as special cases the power law normal compliance condition and the corresponding form of Coulomb's law of friction. The stress-strain constitutive relation is of Kelvin-Voigt type and the heat generation on the contact surface due to friction and grinding is taken into account. We prove the existence of a weak solution to the problem. (Received October 03, 2000)