1106-VL-1048 **Mihhail Berezovski*** (mihhail.berezovski@gmail.com), Department of Mathematical Sciences, Worcester Polytechnic Institute, 100 Institute Rd, Worcester, MA 01609. *Numerical simulation of wave propagation in dynamic materials.* Preliminary report.

Dynamic materials are artificially constructed structures (like metamaterials) which may vary their characteristic properties in space or in time, or both, by an appropriate arrangement or control. These controlled changes in time can be provided by the application of an external (non-mechanical) field, or through a phase transition. Such materials exhibit very unusual behavior. The characteristic phenomenon for dynamic materials is wave propagation because it is also space and time dependent. As a simple example of the complex behavior of dynamic materials, the one-dimensional elastic wave propagation is studied numerically in periodic structures whose properties (mass density, elasticity) can be switched suddenly in space and in time. It is shown that dynamic materials have the ability to dynamically amplify, tune, and compress initial signals over a wide range of carrier frequencies. The thermodynamically consistent high-resolution finite-volume numerical method was successfully applied to the study of the behavior of dynamic materials. The extended analysis of the influence of inner reflections on the energy accumulation and concentration in the dynamic materials is presented. (Received September 10, 2014)