

Abstract Submitted
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Self-organization and feedback effects in the shock compressed media TATYANA KHANTULEVA, St.-Petersburg State University, Faculty of Mathematics and Mechanics, Russia — New theoretical approach to the transport in condensed matter far from equilibrium combines methods of statistical mechanics and cybernetic physics in order to construct closed mathematical model of a system with self-organization and self-regulation. Mesoscopic effects are considered as a result of the structure formation and the feedback effects in an open system under dynamic loading. Nonequilibrium state equations had been involved to incorporate the velocity dispersion. Integrodifferential balance equations describe both wave and dissipative transport properties. Boundary conditions determine the internal scale spectra. The model is completed by the feedback that introduces the structure evolution basing the methods of cybernetic physics. The obtained results open a wide prospective for the control methods in applications to new technologies, intellectual systems and prediction of catastrophic phenomena.

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