

Ballistic heat transport in the semi-infinite free end Hooke chain caused by external heat supply associated with intensive laser excitation

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Unsteady ballistic heat transport in a semi-infinite free end Hooke chain, lying in a weakly viscous environment, is under investigation. We consider the case of external heat supply with constant intensity, which corresponds to intensive laser excitation. The process is described analytically by kinetic temperature of the chain in both discrete and continuum formulations. We show that discrete and continuum solutions for the kinetic temperature agree far from the boundary (free end). However, continuum description is determined with error for fields of the kinetic temperature near the boundary even in the nonequilibrium steady state. The stationary continuum solution is singular in the heating point.