1050-35-172 **Konstantin A Lurie*** (klurie@wpi.edu), Department of Mathematical Sciences, Worcester Polytechnic Institute, 100 Institute Road, Worcester, MA 01609. *Discontinuities in the Wave Propagation Through Dynamic Materials.*

The wave propagation through the dynamic materials assembled in space-time from conventional constituents is governed by linear hyperbolic equations with discontinuous coefficients. Such waves remain smooth only if the characteristics do not collide. If they do (for example, on the material interfaces),then the solutions become discontinuous; in the absence of takeover, the elementary masses cling together and form the delta-singularities with finite mass (clots).With the traveling clots, the problem loses its originally linear character because the clots move at velocities that depend on the dynamic disturbances and are no longer controllable by the local material property pattern that specifies the velocities of small disturbances.The motion of clots becomes well defined as we postulate the conservation of mass and momentum maintained through their formation. We also postulate irreversibility of such formation: the once created clot cannot disintegrate. This scheme is applied to the study of the optimal traffic flow without takeover governed by the continuity equation in 1D; particularly, solutions with concentrated traveling masses are introduced as participants in the transportation policies formulated for this type of traffic. (Received March 03, 2009)