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Novelties in additive manufacturing and bio-printing

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Nonlinear conservation laws subject to random initial conditions pose fundamental problems in the evolution and interactions of shocks and rarefactions. Using a discrete set of values for the solution, we derive a hierarchy of equations in terms of the states in two different methods. This hierarchy involves the n-point function, the probability that the solution takes on various values at different positions, in terms of the n+ 1-point function. In the first approach, these equations can be closed but the resulting solutions do not persist through shock interactions. In our second approach, the n-point function is expressed in terms of the n+ 1-point functions, and remains valid through collisions of shocks.

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