Symbolic dynamics in chaotic wave vibration. (English summary)


Summary: “We consider a class of nonlinear boundary value problems for partial differential equations, whose solutions are, basically, characterized by the iteration of a nonlinear function. We apply methods of symbolic dynamics of discrete dynamical systems of the interval in order to compute the topological entropy associated to chaotic wave solutions. Then, from the variation of the entropy with the physical parameters we identify phase transitions. We also interpret the phase transition point in terms of the symbolic dynamics. Using these methods we formalize self-similar phenomena and study some of their properties.”