

## String lattices vibrating near limiters

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*Abstract:* Lattice structures are widely used in various branches of mechanics and engineering. Of great model interest are string lattices, which are stretched intersecting strings with massive knots, in which there are solids. Such lattices can simulate two-dimensional objects, for example, membranes, and when adopting additional hypotheses, plates, various types of panels, etc. The report gives a brief overview of the dynamics of lattices with different types of cells (square, rectangular and hexagonal), the process of wave propagation with transverse oscillations of nodes is considered. Diverse non-linear effects manifest themselves when vibrations of string lattices, whose nodes collide with obstacles. In the corresponding vibro-impact systems with many shock pairs, various dynamic phenomena are described, such as impacts synchronization in remote shock pairs, nonlinear resonance effects inherent in the simplest impact oscillator, and others. The results of analytical studies obtained using time-frequency methods are presented. In the case of random oscillations, methods of diffusive Markov processes are used. A review of a large number of experimental data obtained at the facility developed at the Mechanical Engineering Research Institute of the Russian Academy of Sciences is given.

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