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Influence of Controlled Viscous Dissipation on Propagation of Strongly Nonlinear Waves in Steel-Based Phononic Crystals ERIC HERBOLD, VITALI NESTERENKO, CHIARA DARAIO, University of California, San Diego — Strongly nonlinear phononic crystals were assembled from chains of stainless steel spheres with diameter 4.78 mm. Propagation of solitary waves and splitting of initial pulse into train of solitary waves excited by the impact of piston was investigated in different viscous media in experiments and in numerical calculations. Oil of various grades was used to introduce controlled dissipation into the system. Preliminary results indicate that splitting of the initial pulse into the train of solitary waves was dramatically influenced by viscosity. This work was supported by NSF (Grant No. DCMS03013220).

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