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Propagation of strongly nonlinear signals in a two dimensional network of granular chains CHIARA DARAIO, Aeronautics and Applied Physics, California Institute of Technology, VITALI F. NESTERENKO, Mechanical and Aerospace Engineering Department, University of California, San Diego — We report experimental observation of strongly nonlinear signals propagating in a two dimensional system composed of guided granular chains. In this system one of the chains contacts two others to allow splitting and redirecting the solitary-like signal formed by impact on the first chain. The system consists of a double Y-shaped guide in which high- and low-modulus chains of spheres are arranged in various geometries. We observed fast splitting of the initial pulse, rapid chaotization of the signal and sharp bending of the propagating acoustic information. Pulse and energy trapping in the branches was also observed in composite systems assembled from hard- and soft- particles.

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