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Sudden Chain Energy Transfer Events in Vibrated Granular Media NICOLÁS RIVAS, University of Twente, SUOMI PONCE, RODRIGO SOTO, PATRICIO CORDERO, NICOLÁS MUJICA, Departamento de Física, FCFM, Universidad de Chile, Santiago, Chile, DINO RISSO, Departamento de Física, Universidad del Bío-Bío, Concepción, Chile, BASILLE GALLET, Laboratoire de Physique Statistique, CNRS, Ecole Normale Supérieure, Paris, France — In a mixture of two species of grains of equal size but different mass, placed in a vertically vibrated shallow box, there is spontaneous segregation. Once the system is at least partly segregated and clusters of the heavy particles have formed, there are sudden peaks of the horizontal kinetic energy of the heavy particles, that is otherwise small. Together with the energy peaks the clusters rapidly expand and the segregation is partially lost. The process repeats once segregation has taken place again, either randomly or with some regularity in time depending on the experimental or numerical parameters. An explanation for these events is provided based on the existence of a fixed point for an isolated particle bouncing with only vertical motion. The horizontal energy peaks occur when the energy stored in the vertical motion is partly transferred into horizontal energy through a chain reaction of collisions between heavy particles.

Prefer Oral Session
 Prefer Poster Session

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