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Self-assembled granular towers[1] FELIPE PACHECO-VAZQUEZ, FLORIAN MOREAU, NICOLAS VANDEWALLE, STEPHAN DORBOLO, GRASP, Physics Department B5, Universite de Liege, B4000-Liege, Belgium, GROUP FOR RESEARCH AND APPLICATIONS IN STATISTICAL PHYSICS TEAM — When some water is added to sand, cohesion among the grains is induced. In fact, only 1% of liquid volume respect to the total pore space of the sand is necessary to built impressive sandcastles. Inspired on this experience, the mechanical properties of wet piles and sand columns have been widely studied during the last years. However, most of these studies only consider wet materials with less than 35% of liquid volume. Here we report the spontaneous formation of granular towers produced when dry sand is poured on a highly wet sand bed: The impacting grains stick on the wet grains due to instantaneous liquid bridges created during the impact. The grains become wet by the capillary ascension of water and the process continues, giving rise to stable narrow sand towers. Actually, the towers can reach the maximum theoretical limit of stability predicted by previous models, only expected for low liquid volumes.

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