

Abstract Submitted  
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**Morphodynamics of a granular bed in a water-filled cylinder subjected to perturbed oscillations**<sup>1</sup> MATIAS DURAN-MATUTE, THIJS VAN GORP, GERTJAN VAN HEIJST, Eindhoven Univ of Tech — We study experimentally the morphodynamics of a granular bed at the bottom of an oscillating water-filled cylinder. The granules are translucent PMMA particles with a typical size of 2mm. The bed thickness is measured in real time using a light attenuation technique. As shown already by previous work, the bed remains flat close to the center of the cylinder, and radial ripples form at outer radii. The size of the inner flat region and the number of ripples depend on the frequency and amplitude of the cylinder's oscillation. In the present work, we are interested in the dynamics and control of the bed forms when the primary sinusoidal signal of the oscillation is perturbed by adding a second sinusoidal signal with a relatively small amplitude, a different frequency, and a phase lag. Varying the parameters of the secondary signal results in a signal that can be asymmetric or modulated, for example. These properties translate into the bed producing simple behavior like the propagation of the ripples at a constant speed or more complex behavior like the time dependent coarsening and thinning of the ripples.

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