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Spreading granular material with a blade EMILIE DRESSAIRE, VACHITAR SINGH, EMMA GRIMALDI, NYU Polytechnic School of Engineering, ALBAN SAURET, SVI, CNRS/Saint-Gobain — The spreading of a complex fluid with a blade is encountered in applications that range from the bulldozing of granular material in construction projects to the coating of substrates with fluids in industrial applications. This spreading process is also present in everyday life, when we use a knife to turn a lump of peanut butter into a thin layer over our morning toast. In this study, we rely on granular media in a model experiment to describe the three-dimensional spreading of the material. Our experimental set-up allows tracking the spreading of a sandpile on a translating flat surface as the blade remains fixed. We characterize the spreading dynamics and the shape of the spread fluid layer when varying the tilt of the blade, its spacing with the surface and its speed. Our findings suggest that it is possible to tune the spreading parameters to optimize the coating.

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