

Abstract Submitted
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Dense granular flow around a rigid or flexible intruder EVELYNE KOLB¹, PMMH, ESPCI, MOKHTAR ADDA-BEDIA², LPS, ENS, ANNETTE HOSOI COLLABORATION³, KO OKUMURA COLLABORATION⁴ — We experimentally studied the flow of a dense granular material around an obstacle (rigid cylinder or flexible plate) placed in a 2 dimensional confined cell at a packing fraction near the 2D jamming threshold. In the case of the rigid obstacle, the displacement field of grains as well as the drag force experienced by the obstacle were simultaneously recorded and a parametric study was done by changing the cell size, the intruder diameter or the packing fraction. The drag force experienced by the intruder and the formation of a wake behind the obstacle were very sensitive to the approach to jamming. The same experimental set-up was adapted to a flexible intruder and coupling between the granular flow and fibre deflexion were imaged. The deformation of the fibre could be compared with theoretical predictions from elastica.

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