

Flow of anisometric particles in a quasi-two-dimensional hopper

Ahmed Mohamed Ali Ashour, Balázs Szabó, Zsolt Kovács, Sandra Wegner, David Fischer, Ralf Stannarius, and Tamás Börzsönyi

Lecturer

Abstract

The stationary flow field in a quasi-two-dimensional hopper is investigated experimentally. The behavior of materials consisting of beads and elongated particles with different aspect ratio is compared. We show, that while the vertical velocity in the flowing region can be fitted with a Gaussian function for beads, in the case of elongated grains the flowing channel is narrower and is bordered with sharper velocity gradient. For this case, we quantify deviations from the Gaussian velocity profile. Relative velocity fluctuations are considerably larger and slower for elongated grains.

PHYSICAL REVIEW E - 2018, June