



ESPCI
Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Bureau d'Études, Bâtiment L, 2^{ème} étage

Vendredi 30 septembre 2016, 11h00-12h00

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Rotation and ordering of elongated particles under shear

Ordering and alignment of elongated objects in shear flows can be observed at all length scales, in log jams on rivers, in seeds, nanorods, viruses, and even at molecular scales in nematic liquid crystals. We show, that for dry granular materials in steady shear flow the time and ensemble averaged direction of the main axis of the particles encloses a small angle with the streamlines. This shear alignment angle is independent of the applied shear rate, and it decreases with increasing grain aspect ratio. The effective friction of the granular material is considerably reduced due to the alignment. At the grain level the steady state is characterized by a net rotation of the particles, as dictated by the shear flow. We compare the dynamics observed in a dry granular material to non-Brownian suspensions under shear.

Prochain séminaire : vendredi 7 octobre, Brigitte Senut (Museum National d'Histoire Naturelle)

Programme des séminaires : www.pmmh.espci.fr, onglet *Séminaires PMMH*

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