



قطب علمی
سیستم‌های پیچیده
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سمینار هفتگی ماده چگال نرم

New model for swimming in granular media*

Ehsan Irani

Department of physics
Sharif University

In this paper, authors study a simple model based on periodic contraction and extension of body in a granular bed. Using an event-driven molecular dynamic simulation, and they find optimal conditions that idealized swimmers must use to critically fluidize a sand bed so that it is rigid enough to support a load when needed, but fluid enough to permit motion with minimal resistance. They find that both swimming velocity and swimming efficiency have optima at different swimming frequencies. If the swimmer moves too fast, the voids created by the swimming stroke become larger and finally surround the whole swimmer. If the swimmer moves too slowly, the bed re-solidifies before the swimmer can move forward.

* I am going to talk about paper “Swimming in granular media”, T. Shimada *etal*, *Physical Review E* 80, 020301 (2009)

زمان: شنبه ۸۹/۳/۲۲ ، ساعت : ۲:۰۰

مکان: اتاق ۴۱۲ دانشکده فیزیک