

Colloquium

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Friction mechanisms at small and large scales: New insights from computer simulations

day

OCTOBER 9, 2013 WEDNESDAY

location

EE01

time

16:00

ABSTRACT

Surfaces of solids tend to be rather complex. They have roughness on a multitude of length scales, the chemical composition is undefined and may even change with time. Yet, the laws describing the friction between two solids are surprisingly simple: To a good approximation, friction between solids is linear in the force squeezing the solids together and independent of the apparent contact area. Moreover, kinetic friction barely depends on the sliding velocity, at least at small velocities.

Many propositions have been made within the last 100 years for the microscopic origin of solid friction and the laws describing it. In recent years, computer simulations have been very successful in testing the competing theories. Some simulations lead to new theories. I will review some of these developments. This includes examples where simulations have triggered new developments for practical applications.

The Physics Colloquia are designed to address a non-specialist, broad audience and introduce topics of contemporary research through lectures by leading experts. We warmly invite all members of the student body, including undergraduates enrolled in any programme.

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