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Friction at the nanoscale:theory and experiment

MICHAEL MARDER, The University of Texas at Austin

Bowden and Tabor established more than 50 years ago that friction is due to populations of asperities. In recent years, increasingly detailed experiments have begun to document the dynamics of these asperities during sliding, and to show that several different modes of motion are possible. I will discuss experiments that probe slipping motion of macroscopic samples down to the nanoscale, and show that the small slow slipping motions are described by the rate and state theory of friction that was developed for very different length and time scales.