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**Dynamics of projectile impact in a two-dimensional granular medium<sup>1</sup>**

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Our experiments and molecular dynamics simulations on a projectile impacting a two-dimensional granular medium reveal that the average deceleration of the projectile is constant during the penetration and proportional to the impact velocity [M. Pica Ciamarra, A. H. Lara, A. T. Lee, D. I. Goldman, I. Vishik, and H. L. Swinney, Phys. Rev. Lett. 92, 194301 (2004)]. Thus the time taken for a projectile to decelerate to a stop is independent of its impact velocity. The simulations show that the probability distribution function of forces on grains is time independent during a projectile's deceleration in the medium. At all times the force distribution function decreases exponentially for large forces.

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