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A Model for Static and Dry Friction CHRISTOPHER DALY, JEFFREY SOKOLOFF[1], Northeastern University — It will be shown that the Muser-Robbins (MR) model, consisting of mobile molecules trapped between two incommensurate crystalline solids, exhibits many of the qualitative features of friction between macroscopic solids, such as the result that the static friction is greater than the kinetic friction, stick-slip motion and a force of static friction which increases as a function of the time that the two solids are in contact and stationary. At zero temperature, the kinetic friction is highly sensitive to the direction of sliding, but this sensitivity decreases markedly as the temperature rises. At low temperatures (with the surfaces stationary for a relatively long time), the model gives a static friction approximately 3 times larger than the kinetic friction for sufficiently slow velocities, but this ratio decreases steadily as the temperature is increased.

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