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Precursor events and the onset of frictional sliding ANDRAS LIBAL, MARK ROBBINS, Johns Hopkins University — The precursor events leading to steady state sliding friction are investigated using a simple two-dimensional model of a rectangular block on a flat surface. As in experiments[1], a succession of cracks nucleates from the rear of the block. Each propagates rapidly and then arrests after a distance that scales with the height at which the lateral force is applied to the block. The propagation distance grows with each successive crack until a steady sliding state is attained. The distribution of local shear stress at the interface can be obtained directly in our simulations. The relation between this stress distribution, the static friction, the normal load, and the nucleation and propagation of successive cracks will be discussed. [1] S.M. Rubinstein, G. Cohen and J. Fineberg, PRL 98, 226103 (2007)

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