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Pulling adsorbed polymers at an angle: A low temperature theory GERASIM ILIEV, University of Toronto/York University, STUART WHITTINGTON, University of Toronto — We consider several partially-directed walk models in two- and three-dimensions to study the problem of a homopolymer interacting with a surface while subject to a force at the terminal monomer. The force is applied with a component parallel to the surface as well as a component perpendicular to the surface. Depending on the relative values of the force in each direction, the force can either enhance the adsorption transition or lead to desorption in an adsorbed polymer. For each model, we determine the associated generating function and extract the phase diagram, identifying states where the polymer is thermally desorbed, adsorbed, and under the influence of the force. We note the different regimes that appear in the problem and provide a low temperature approximation to describe them. The approximation is exact at T=0 and models the exact results extremely well for small values of T. This work is an extension of a model considered by S. Whittington and E. Orlandini.

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