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Adhesion Transition of Flexible Filaments ARTHUR EVANS, ERIC LAUGA, University of California, San Diego — As forays into fabrication and self-assembly venture to increasingly small length scales, the role of adhesion events between material elements of the system must be closely scrutinized. This area of study is typically dominated by investigations into capillary adhesion, but relatively recent interest in carbon nanotubes and biomimetic devices have spurred interest in intermolecular forces as another source of micro- and nano-scale adhesion. We present here a far-field model for "dry" adhesion. We consider a small number N of flexible beams interacting with each other via a typical Lennard-Jones 6-12 potential, and describe the behavior of the system as the ratio of bending rigidity to beam-beam attraction is reduced. Applications ranging from fibrillar systems to the comparatively stiff carbon nanotubes are discussed.

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