

The Classical and Quantum Frenkel-Kontorova Model

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The Frenkel-Kontorova (FK) model is an old model first proposed in 1938. It describes a chain of atoms connected by springs in the presence of an external potential. This deceptively simple model however exhibits very rich and complex behaviors. The FK model has found applications in many physical systems such as adsorbed monolayers, Josephson junctions, charge density waves, magnetic spirals and tribology. In this talk we will report on our recent work on this model including statics, dynamics, heat conduction, and quantum behavior.