On the dynamic process for peeling thin films from substrates: the 1-d case

Dr. Quianfeng Li (FAU Erlangen-Nürnberg)

In the talk, I will discuss the dynamics of peeling thin films from substrates, focusing on the 1-d case. The process involves a nonlinear wave equation governing the peeled region, a displacement boundary condition on the lifting side, and a nonlinear boundary condition at the peeling front, derived through variational principles.

When the given lifting speed at the lifting side is constant, the peeling front propagates with constant speed, resulting in a straight peeled film with a uniform slope. By analyzing the dissipation properties at the peeling front, applying Glimm's methods and characteristic lines methods respectively, we prove that such solution is stable under BV perturbation or weighted C^1 perturbation on the given lifting speed.