1 Reading

Read the paper *Untangling cloth* by Baraff, Witkin, and Kass, from SIGGRAPH 2003. Then answer the following questions concerning it:

(1) What is the friction assumption (low friction or high friction) in fly-papering? Can you think of a situation where this isn't the case—and can the method handle it without major modification?

(2) What cases of mesh intersection are not handled by the system?

(3) How are mesh intersections resolved, and what guarantee is there on resolution?

(4) Do you think the method would work well for very stiff (difficult to bend) shells?

2 Analysis

(5) Find and describe what the second Piola-Kirchoff stress tensor is, and explain how it is different from the Cauchy stress tensor we use in class.

(6) Hair simulation: propose an elastic potential energy that could be appropriate for modeling curly hair. Assume the discrete representation of one strand of hair is a sequence of line segments, each with an attached coordinate system (say the local x-axis is aligned with the segment, and the y- and z-axes are perpendicular to it).