

## ME 115(b): Problem Set #4

(Due Monday, May 8 , 2006)

**Problem #1:** Problem 2(b,d) in Chapt. 5 of MLS text. You need not construct the grasp map. You need only determine if it is force closure (although some methods of proving force closure may require you to determine the grasp map).

**Problem #2:** Problem 3(b) in Chapt. 5 of MLS text.

**Problem #3:** Problem 4(a) in Chapt. 5 of MLS text.

**Problem #4:** Problem 5(a) in Chapt. 5 of MLS text.

**Problem #5:** Problem 8(b) in Chapt. 5 of MLS text.

**Problem #6:** For the grasp pictured below, assume a point contact with friction model, where  $\mu = \tan 30^\circ$ .

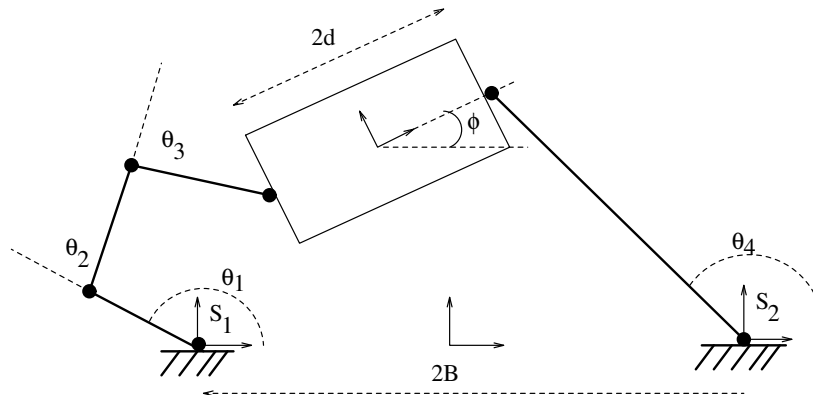


Figure 1: Two Fingred Grasp

1. Is this grasp Force Closure?
2. Calculate the grasp constraint equations. Is this grasp manipulable?