3.021J / 1.021J / 10.333J / 18.361J / 22.00J Introduction to Modeling and Simulation
Markus Buehler, Spring 2008

Part II - lecture 6 - questions

1. Explain the differences between ductile and brittle materials (e.g. take the example of bending a rod).
2. Explain the basic physical processes during brittle fracture.
3. How can this be used to determine a condition for fracture initiation?
4. Explain why cracks have limiting speeds.
5. What is the limiting speed of a mode I (that is, tensile loaded) crack?
6. Explain the concept of hyperelasticity or nonlinear elasticity.
7. Explain the Cauchy-Born rule and what one can calculate with it.
8. Calculate the elastic properties and the wave speeds of a triangular lattice with harmonic interactions.
9. Can cracks move supersonically? If yes, explain this phenomenon using simple physical concepts.

10. Were the goals of today's lecture clear?
11. Was today's lecture clear?
12. Did you feel that today's lecture contributed to your understanding of the topic?
13. What could have been improved in order to make this lecture more useful?

14. Please give us feedback regarding the first problem set for part II (length, content, usefulness to learn the material, how interesting was it).