Homework 13

Due 11/3/11

1. Consider a tennis ball ($m \simeq 0.05\,\mathrm{kg}$) moving at a speed of about $10\,\mathrm{m/s}$. This is a good proxy for regular masses and speeds we normally experience. If you measure the momentum of the tennis ball to a precision of 0.001% (one part in a million), how much uncertainty will you introduce to its position?

2. First part of problem 5.28, but do it relativistically this time. i.e. use the expression $E = \sqrt{p^2c^2 + (mc^2)^2}$. We already did the second part involving phase velocity in class.