

PHY 201/181 Lab Instructor notes
Lab 5: Conservation of Momentum
Fall 2003

- The students have not quite had energy in lecture. You will need a short intro to kinetic energy.
- Students can move the photogates around if they find the positioning inconvenient.
- Point out to the students, best results are obtained when velocities are of order 1 m/s.
- Remind students that motion to the left gives negative velocity.
- Students will have some questions on how to set up the tables. In particular, they might ask about the velocity of the two cars afterwards.
- For each run, they should have a row in the table to list total momentum and kinetic energy. (You might want to encourage students to calculate these as they go along.)
- During the lab, you should go around and verify that the groups are getting momentum conservation for each part of the experiment.
- For the elastic collisions, *both* cars should have bumper-springs on them. Having a spring on each car will lower the force that each car feels.
- We have been using “Fun-Tack” for the coupled car experiment. The sticky stuff should only be applied to the bumper-springs with velcro on them (it sticks better). The only problem with this method is that the sticky-stuff can get on the track and under the cars
- The bumper springs and extra sticky-stuff are stored in one of the drawers containing the cars.
- The estimate of error done in the analysis seems to give results that are too small. I suspect that the cars are still “hitting” the track during collisions, and that this is the dominant source of error. Maybe the springs need to be softer?