

# Order-of-Magnitude Physics – Problem Set 11

Due at the beginning of class.

Do any 1 of the problems + the last question (make up your own question).

You are free to do more if you like; answers will be graded.

“You know my method. It is founded upon the observation of trifles.”

— Sherlock Holmes

## Problem 1. Soda Pop

The pressure inside a soap bubble differs slightly from the pressure outside.

- (a) Use the Buckingham Pi Theorem to write down this pressure difference  $\Delta P$ .
- (b) Use physics to write down this pressure difference. State whether the pressure inside or outside the bubble is greater.
- (c) Repeat (b) for a water droplet (which unlike the bubble is filled).

Your answers should suggest why it is that tiny bubbles in soda cans make a huge racket.

## Problem 2. Ask Your Own Question

Ask an OOM question of your own. You don't have to answer it.