

Physics 301

Homework due 25 September 2024

- 1) Stowe problem 9-1.
- 2) Stowe problem 9-5. To do all parts of this problem, you need the following additional information:

$$c_1 = \varepsilon^{-10}$$

$$c_2 = \varepsilon^{-8}$$

where $\varepsilon = 10^{-23} J$.

- 3) Stowe problem 9-10.
- 4) Stowe problem 9-13.
- 5) Estimate the probability that a measurement of the air pressure in the classroom will detect that all of the air molecules are in the north half of the room. Discuss numerically how unlikely this is (for example, note how many measurements you would have to make to encounter one instance of this result; compare your calculation to an estimate of the number of rooms available on earth for such a measurement; mention how many years it would take to complete this set of measurements; compare this to the lifetime of the universe, and so forth.)