

## 3306 physics lectures, Spring 2026

Prof. Saptarna Bhattacharya

[https://www.physics.smu.edu/saptarnab/PH3306\\_Spring\\_2026/](https://www.physics.smu.edu/saptarnab/PH3306_Spring_2026/)

Based on Simon Dalley's lectures delivered in spring 2025



### WARM UP 9: Kinetic Theory (Halliday 19.1-19.5)

---

*Write your answers in the space following the warm-up question if you can. Write as if you are explaining to a fellow student. If you need more space, you are probably over-thinking things.*

**What are the microscopic properties that make a gas “ideal”?**

**Calculate the difference between root-mean-square and mean of velocities,  $v = [1,2,3]$  m/s**

**Why does the mean distance between collisions between molecules in an ideal gas not depend on how fast they are moving (describe precisely why it cancels)?**

**In one sentence each, microscopically explain what is happening for “conduction”, “convection”, and “radiation”.**