

Welcome to  
Physics 157!

This is me →



- UBC undergrad  
in math/physics

- Research in  
string theory,  
quantum gravity, black holes, cosmology

Mark Van Raamsdonk

- Not scary

# What is this course about?

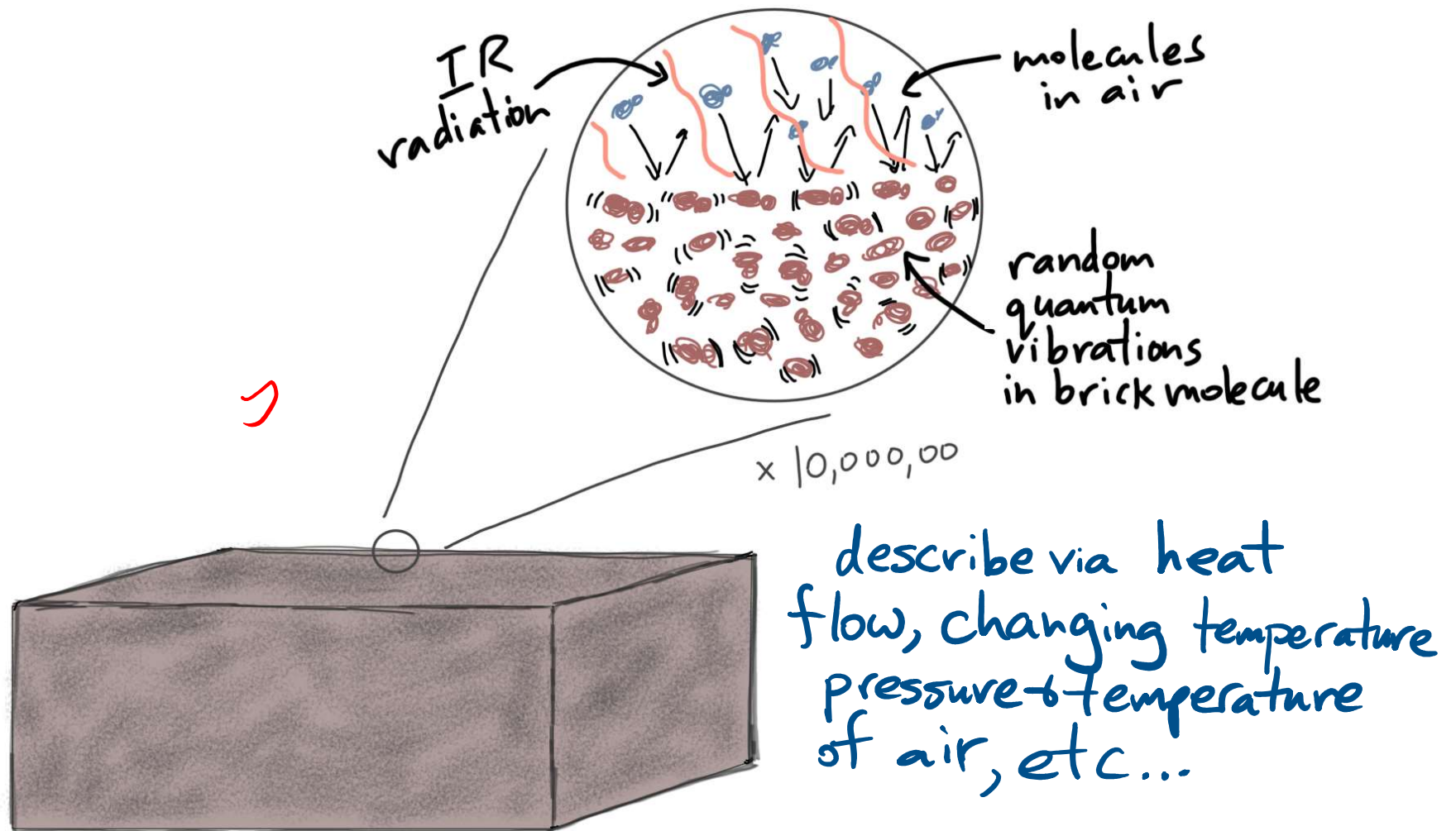
Let's start with a demo.

Question 1: What do you see?  
Record your observations

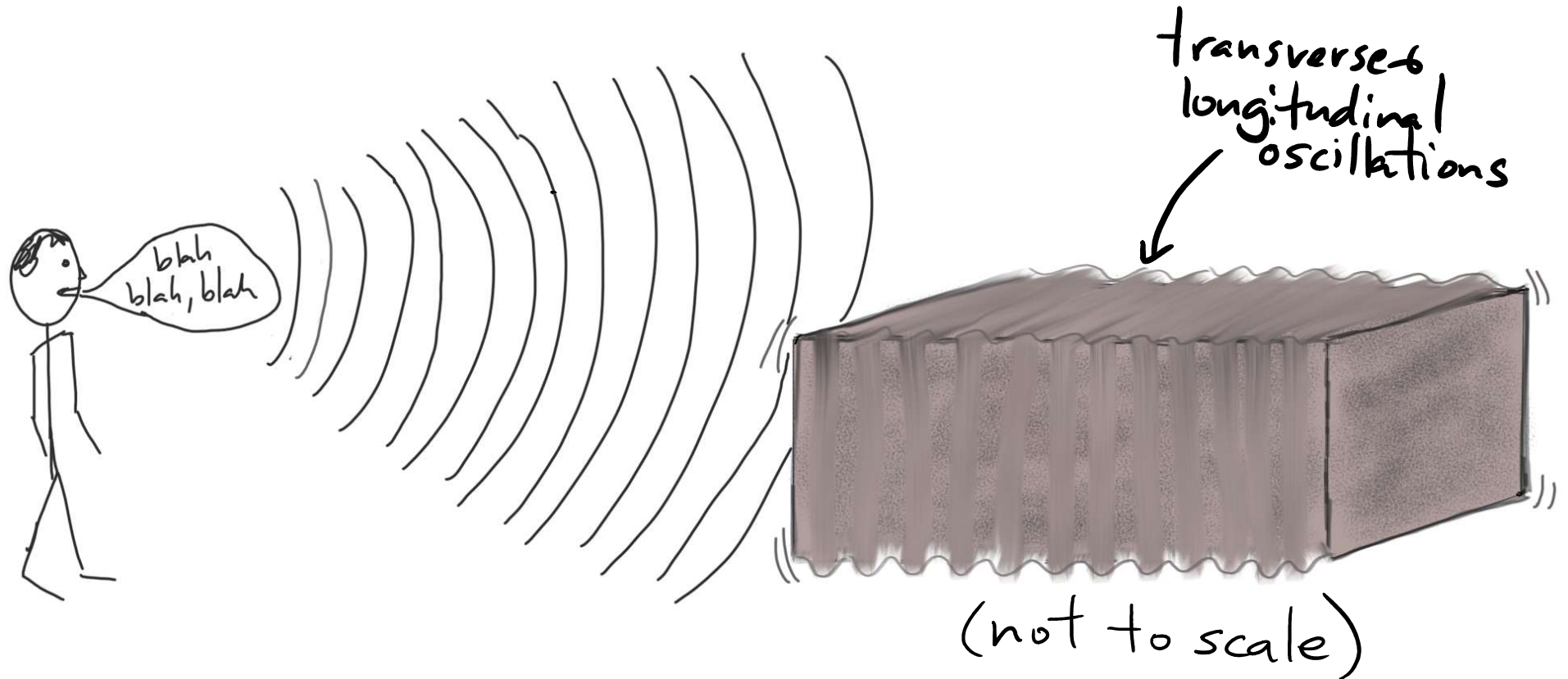
Question 2: What is really  
happening here?

Using your knowledge of physics, describe  
anything that may be occurring / changing  
here that is not immediately apparent.

Thermodynamics: how to summarize microscopic physics of  $10^{23} +$  things.



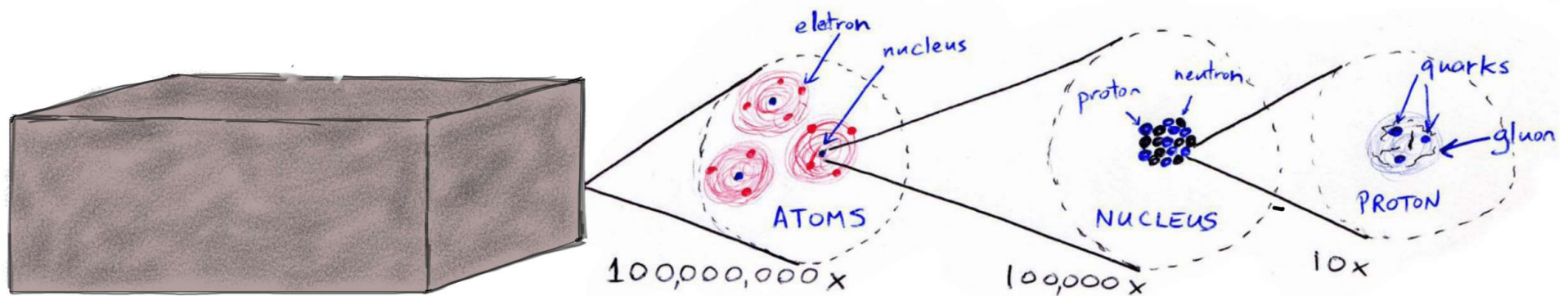
Oscillations + waves: collective motions of macroscopic collections of molecules  
(e.g. sound waves, guitar string, ocean waves)



also: more fundamental waves e.g. light, gravitational waves.

GOAL OF PHYSICS: observe the universe  
- understand the rules

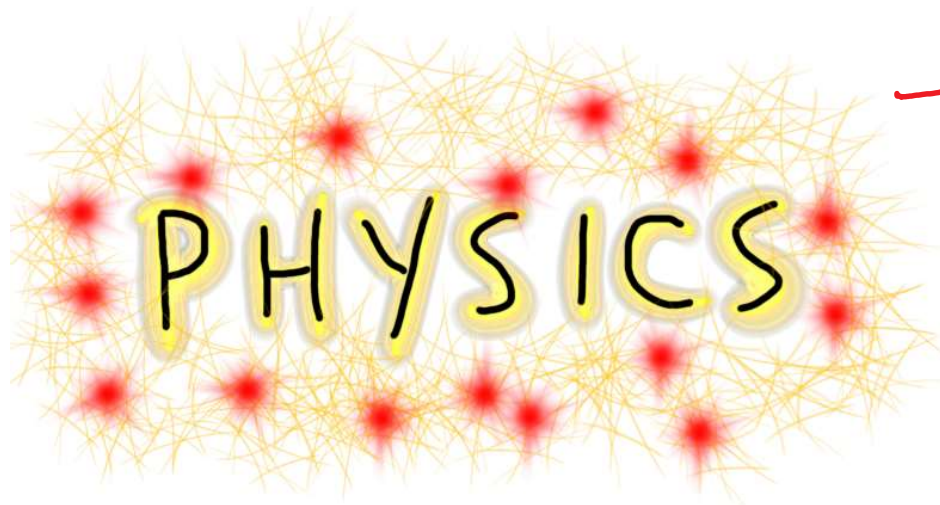
we now understand the precise mathematics  
that underlies physical phenomena from  
100 trillion times smaller than we can see...







This is very powerful:



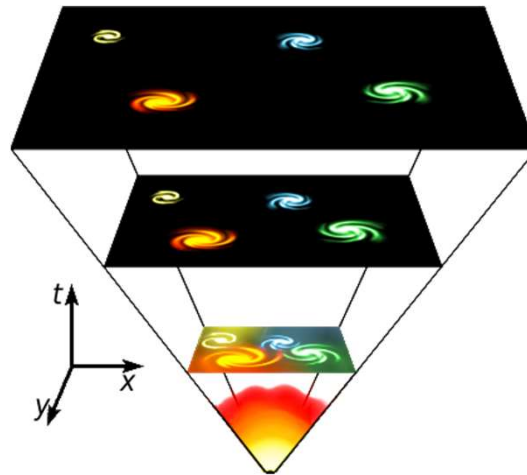
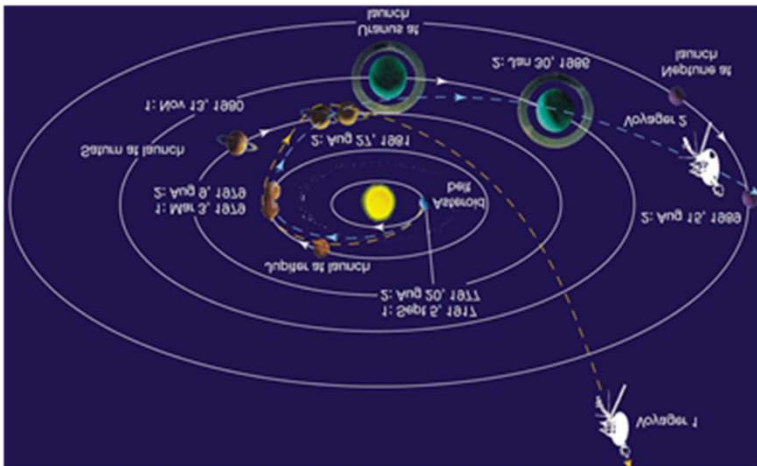
Make better  
mobile devices



(and other technology)

Predict the future

Understand the past



Course information:

My webpage for our section:

<http://www.phas.ubc.ca/~mav/Phys157/P157.html>

I have e-mailed you this link.

# Physics 157 (section 101):

## Introductory Physics for Engineers I

---

Professor: [Mark Van Raamsdonk](#)    office: Hennings 420    e-mail: [mav \(at\) phas.ubc.ca](mailto:mav(at)phas.ubc.ca)

Lectures: [Monday, Wednesday, Friday 9:00am - 10:00am in Life 2201](#)

Office Hours: [available after each class, more TBA](#)

Welcome to Physics 157!

You can find an outline and most of the useful information about the course, grading scheme, exams, etc... [here](#).

To find out what we expect you to know, see the [learning goals for the course](#).

In this course, you can ask questions outside of class time using [Piazza](#). Sign up [here](#).

The reading quizzes and some assignments will be available through [Canvas](#). You should go here to register your i-clicker.

All the lecture slides, readings, and homework sets will appear below:

| Date     | Topics                                                                            | Slides, etc...         | Reading/Homework                                                    |
|----------|-----------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------|
| Sept 5th | Introduction                                                                      | <a href="#">slides</a> | Read chapter 17.1<br>Do the reading quiz on Canvas<br>by 9am Friday |
|          | Concepts of thermodynamics: Zeroth law of thermodynamics, Temperature scales, Gas |                        |                                                                     |