MATH0488 – Elements of stochastic processes

Molecular dynamics: Brownian motion

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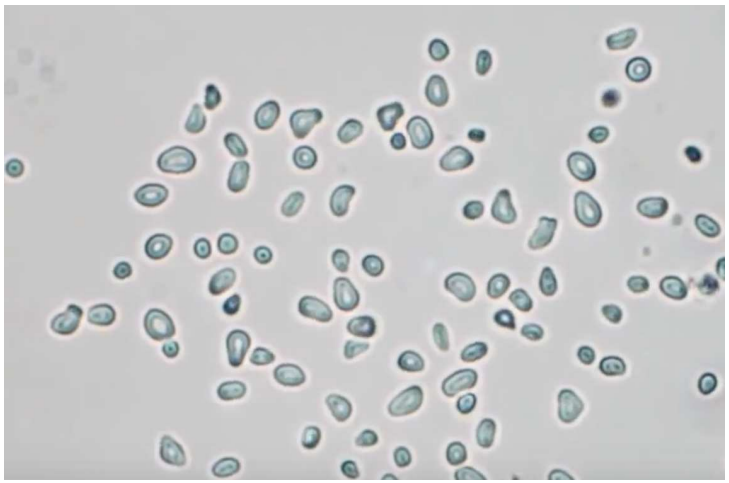
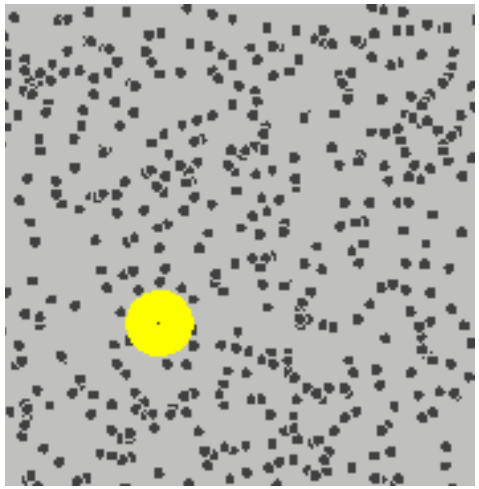
Introduction





Macroscale behavior: little particles
of plant pollens jiggle around in a liquid.

Robert Brown.
(botanist, experimentalist).

Microscale origin: effect of collisions
with smaller liquid molecules in thermal motion.

Albert Einstein.
(theoretical physicist).

We will look at foundational discoveries of Brown and Einstein.

Agenda

- We will be meeting in building B37 room Amphi 2 from 10h45 to 12h45 at the following dates:

1	2	3	4	5	6
14/03	21/03	28/03	18/04	25/04	02/05
lecture	Q&A	Q&A	Q&A	Q&A	Q&A

- Your presence is strongly recommended for the lecture:
  - Tuesday March 14, 10h45–12h45,
- If you should need some help, please attend the Q&A sessions or contact J. Coheur, T. Lambert, or M. Arnst by email to ask a question by email or schedule an appointment.
- Please work in groups of 2 or 3 people. Send the first and last names of all the group members (2 or 3 people), as well as their email addresses, by email to J. Coheur before/on Monday March 20.
- The project report must be sent in PDF format by email to M. Arnst before/on Thursday May 4.
- Project presentations will be scheduled between Tuesday May 9 and Tuesday May 16.

Grading

- Report:
  - The report should collect your solutions to all the exercises that you worked on.
  - One report per group is required. The group is responsible for ensuring that work is fairly distributed among group members and that a high-quality report is written.
  - The report must be neat, well organized, and professionally presented. All graphs must be computer plots. Label all graph axes and include proper units.
  - Please include a list of all the references that you will have consulted.
  - Length of 15 to 30 pages (including figs. and list of refs., single spacing, font size of 12 pt).
  - The report must be sent in PDF format by email to M. Arnst before/on Thursday May 4. Please attach to your email a file with any code that you will have written.
- Presentation:
  - Please prepare a creative presentation. Be original and thoughtful in your selection of material that you include. The presentation need not collect all the solutions to all the exercises that you worked on because the report already does that. The presentation should collect only those solutions that you consider the most important or the most interesting ones.
  - Be original and thoughtful in how you present the material that you include. Slides offer opportunities that the report may not, such as displaying animations. Graphs in slides typically require larger axis and tick labels than graphs in the report.
  - Length of about 10 slides. The first slide must include the group members names, and the last slide must list conclusions.

Contact

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