

# Brownian Motion

We will apply our newly acquired knowledge about classes to simulate Brownian motion. This task aligns perfectly with the principles of object-oriented programming, as each Brownian particle (or colloid) can be represented as an object instantiated from the same class, albeit with different properties. For instance, some particles might be larger while others are smaller. We have already touched on some aspects of this in previous lectures.

```
#| autorun: true
#| edit: false
#| echo: false
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd

plt.rcParams.update({'font.size': 12,
                    'lines.linewidth': 1,
                    'lines.markersize': 10,
                    'axes.labelsize': 11,
                    'xtick.labelsize' : 10,
                    'ytick.labelsize' : 10,
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                    'xtick.direction' : 'in',
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```

## Brownian Motion

### What is Brownian Motion?

Imagine a dust particle floating in water. If you look at it under a microscope, you'll see it moving in a random, zigzag pattern. This is Brownian motion!