

Programming techniques for physical simulations

Exercise 4

Concepts for the machine precision routine

Think about the required concepts for the machine precision routine you wrote in the first week. Document these concepts.

Machine precision routine using templates

The machine precision routine can be implemented in a more generic way using templates. Implement a function `epsilon()` which returns the machine precision for any type `T` and check the values for `float`, `double` and `long double`. Document the required concepts for this function.

Penna Model I

The aim of this exercise is to introduce the Penna model. Read the paper by Penna (T.J.P. Penna, *J. Stat. Phys.* **78**, 1629 (1995)) and formulate the stated concepts in your own words. What are the features which all the individuals have in common? Which features are different? How would you represent an individual in your code? **DO NOT WRITE ANY CODE YET!**