

# Parallelize particle simulation

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## **Abstract**

This report serves to describe a programming project in the course ID1217, Concurrent programming. The project was to implement an algorithm for particle simulation which ran in time close to  $O(n)$ .

## **Introduction**

## **The algorithm**

The algorithm we have chosen to implement is probably known as binning. We divide the field of particles into several 'bins' (like a grid) which we then use to filter out which particles we should take into account when calculating forces.

## **Implementation details**

**Serial**

**OpenMP**

**Pthreads**

**MPI**

**Tests**

## **Calculations and results**

## **Discussion and thoughts**

## **Plots and figures**